

FIG. 1
(PRIOR ART)

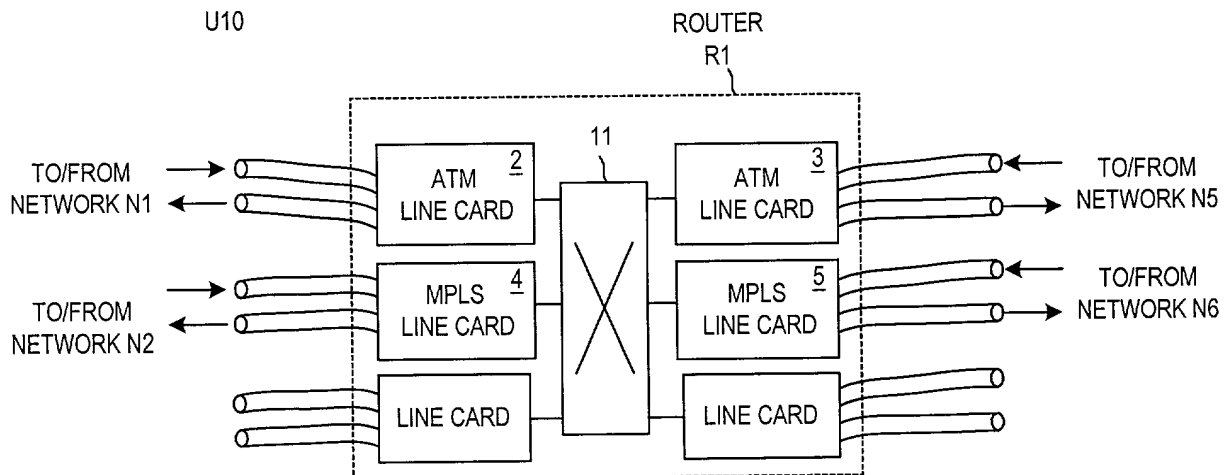


FIG. 2
(PRIOR ART)

20030515-00001

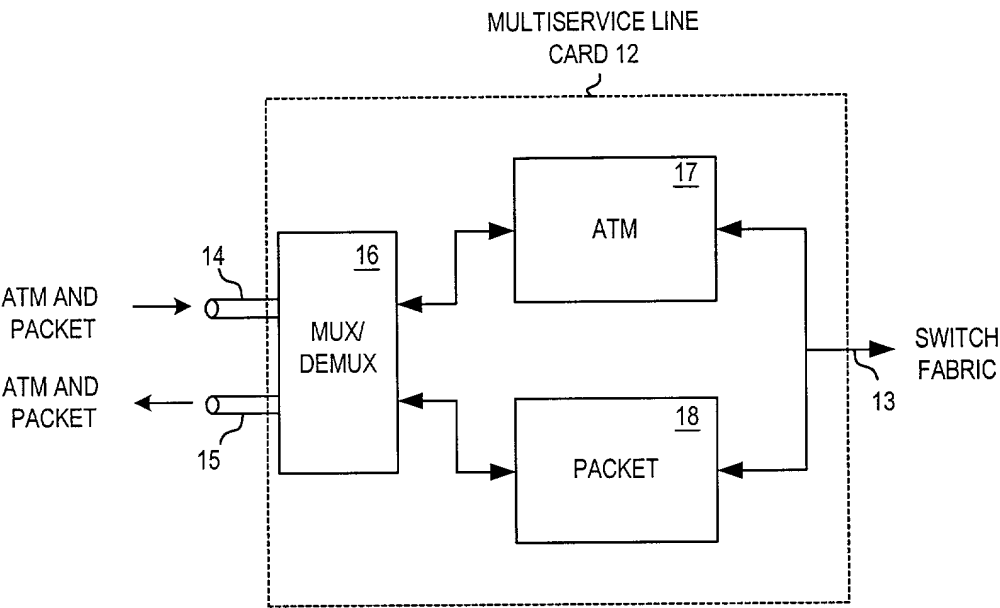


FIG. 3

FIG. 3 is a block diagram of a multiservice line card 12.



SWITCH FABRIC	APPLICATION TYPE	INGRESS APPL TYPE	EGRESS APPL TYPE
CELL	ATM => ATM	0	8
	ATM => MPLS PACKET	1	9
	MPLS PACKET => ATM	2	10
	MPLS PACKET => MPLS PACKET	3	11
PACKET	ATM => PACKET	4	14
	PACKET => ATM	6	12
	AAL5 => PACKET	5	14
	PACKET => AAL5	6	13
	PACKET => PACKET	6	14

APPLICATION TYPES

FIG. 6

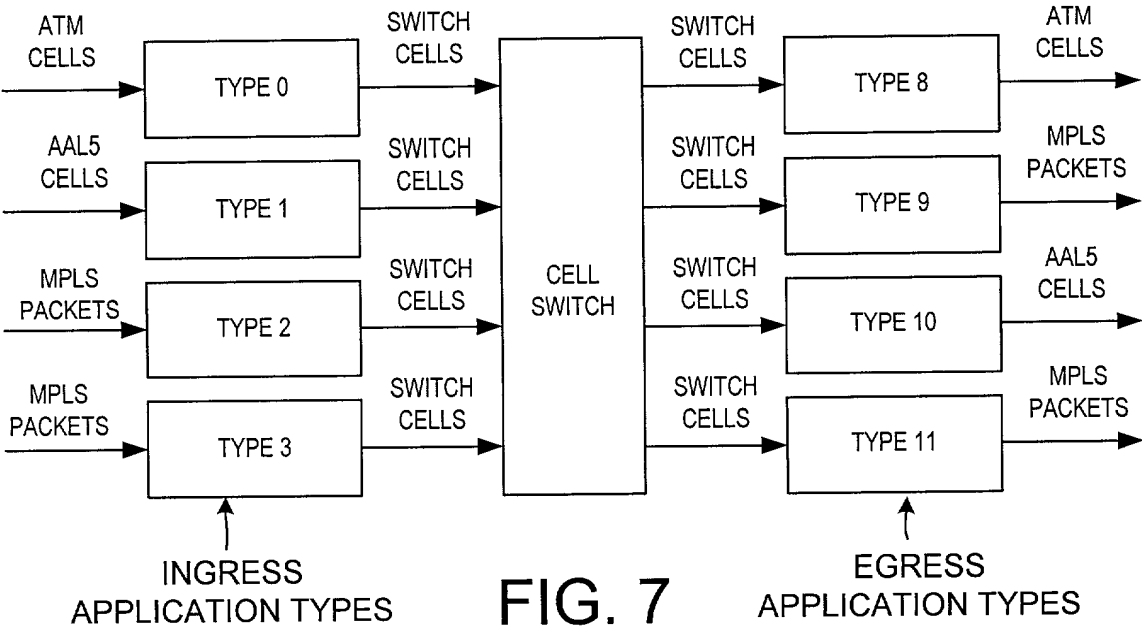


FIG. 7

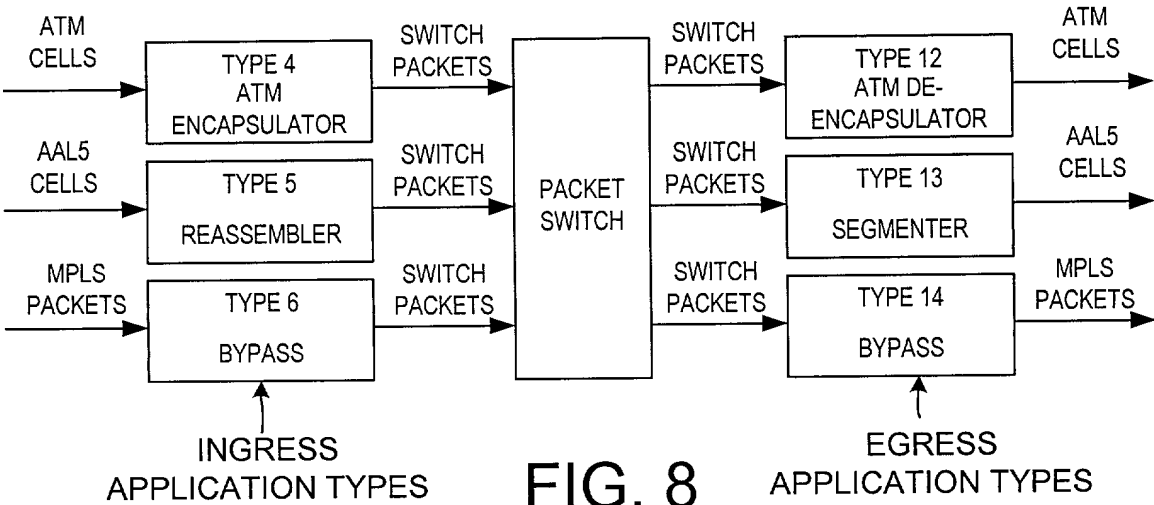
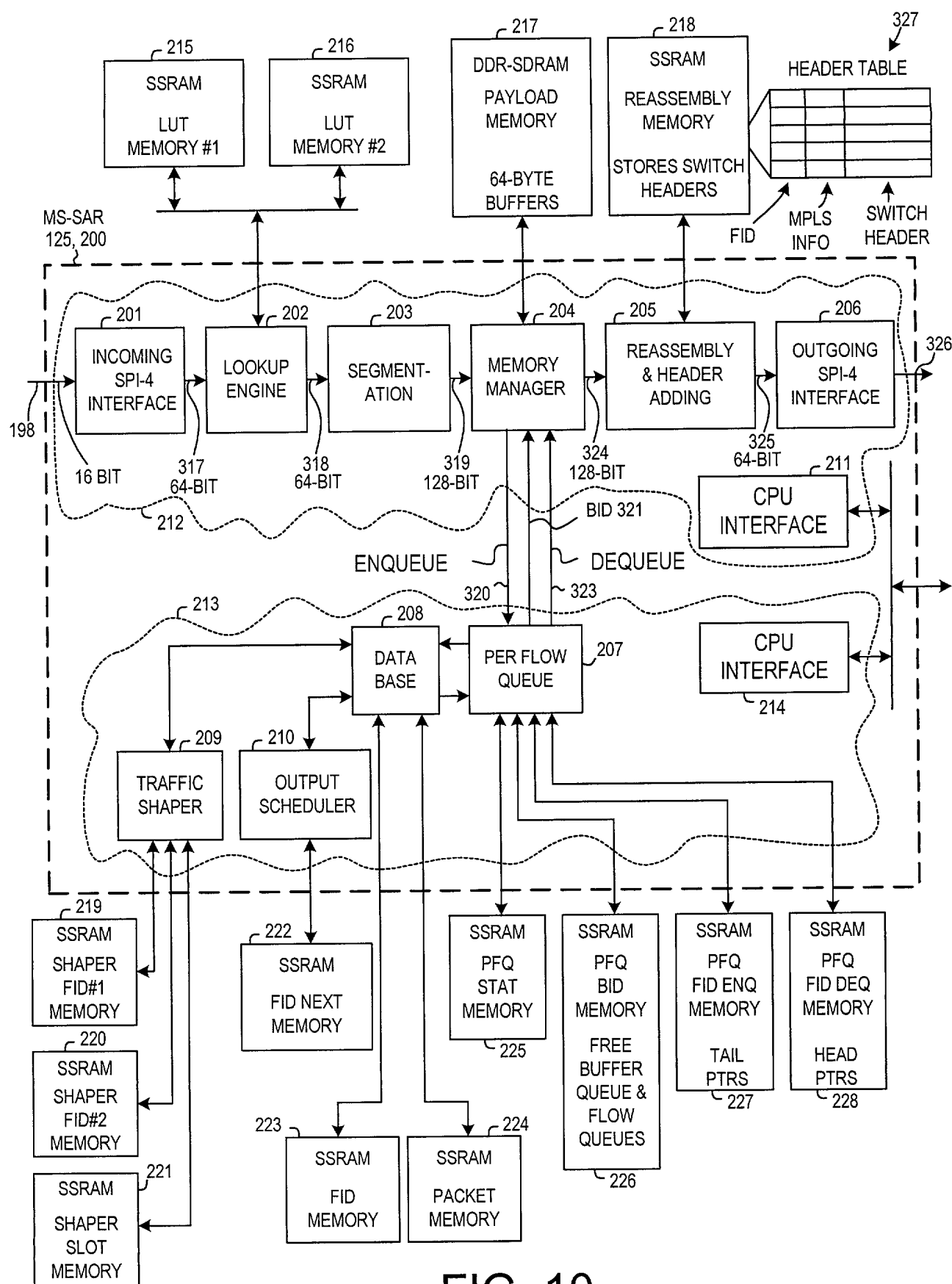


FIG. 8



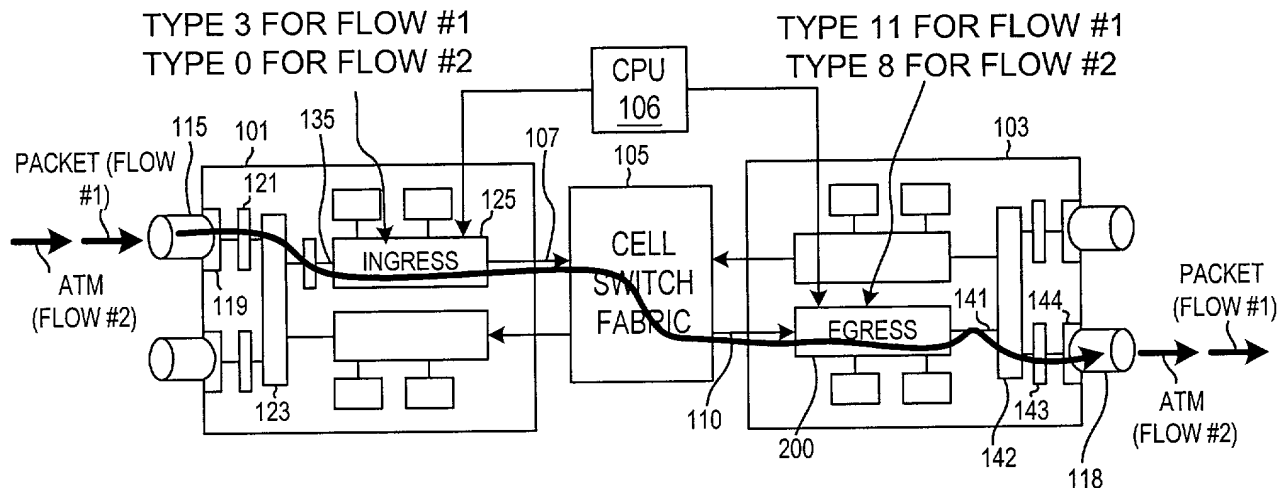


FIG. 9

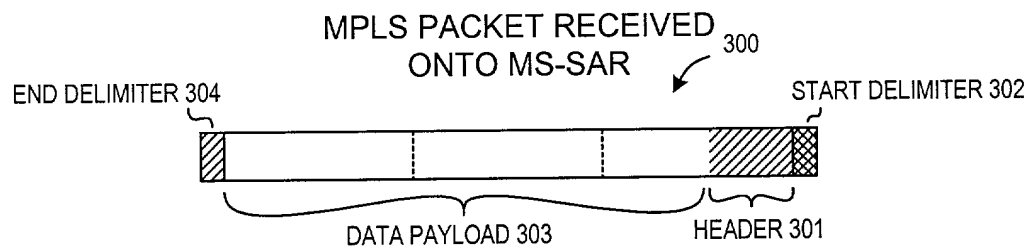


FIG. 11

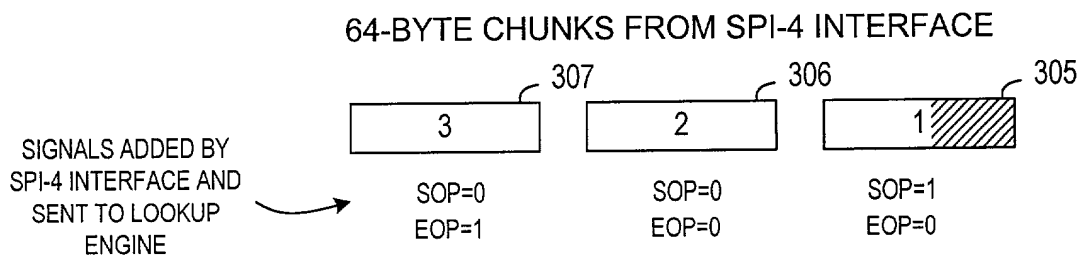
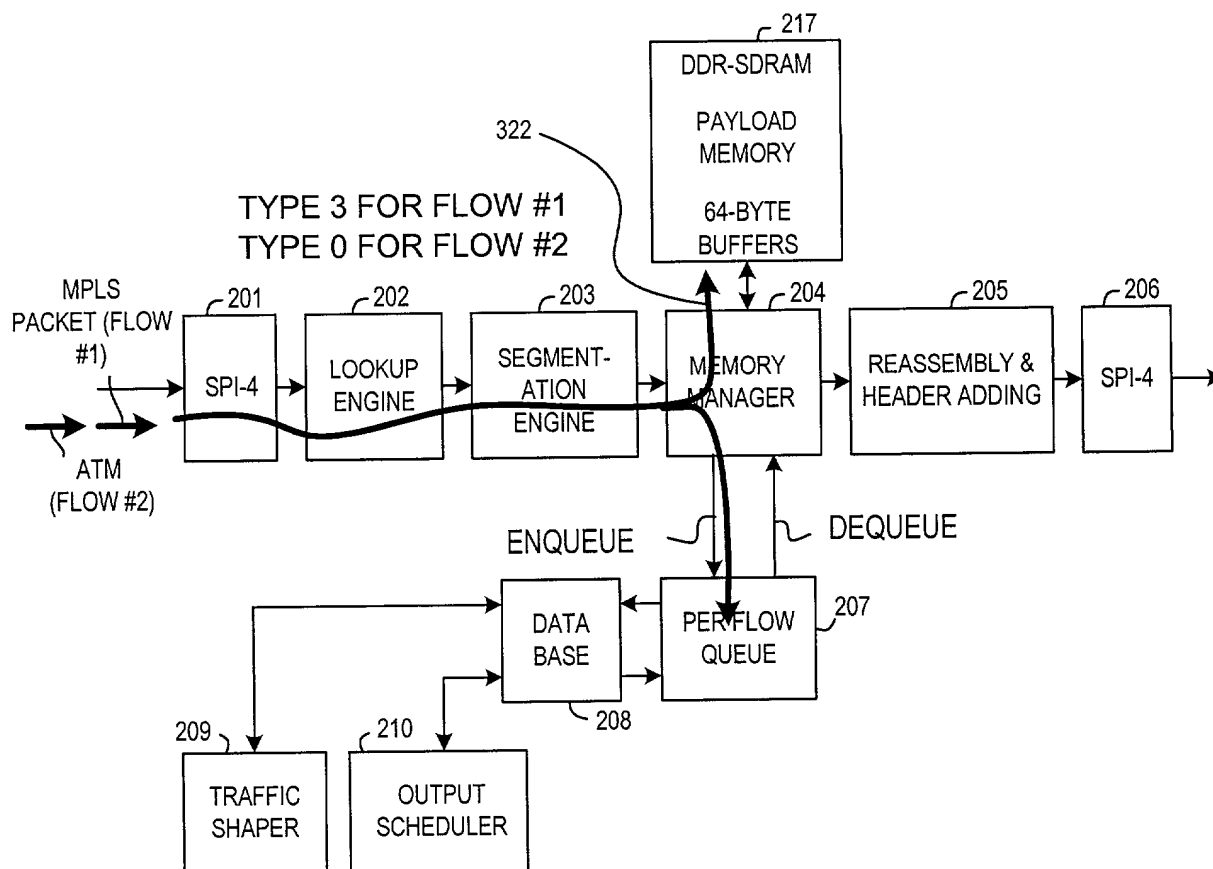


FIG. 12

7/45



INGRESS MODE

FIG. 13

PORT TABLE IN LOOKUP BLOCK

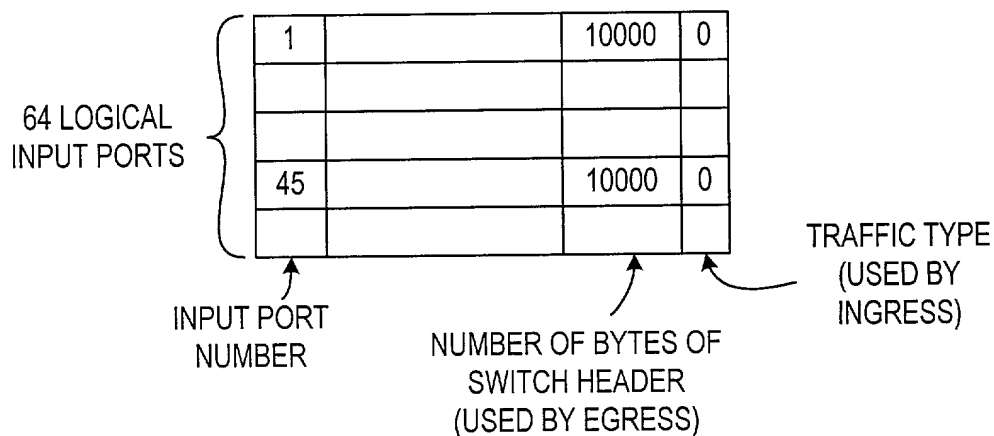


FIG. 14

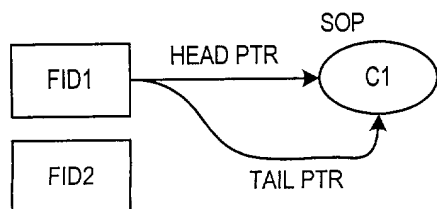


FIG. 15A

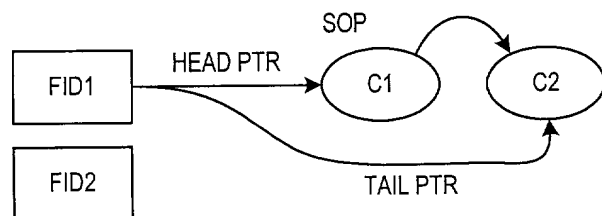


FIG. 15B

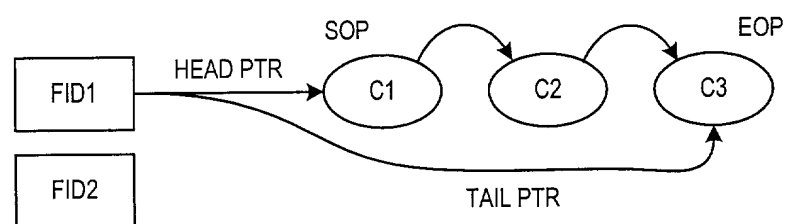


FIG. 15C

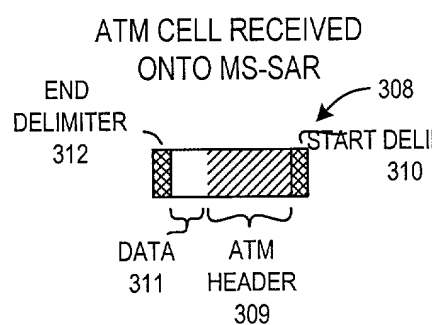


FIG. 20

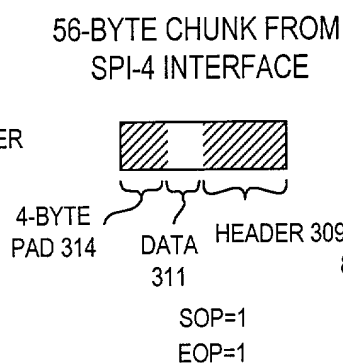


FIG. 21

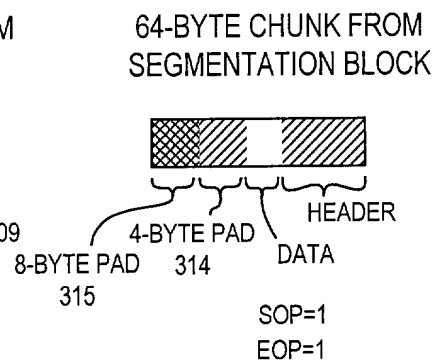


FIG. 22

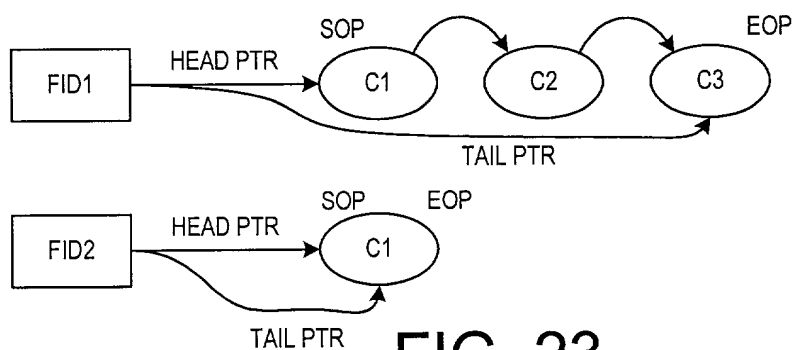


FIG. 23

NAME	NO BITS	RANGE	WR	DESCRIPTION
BID HEAD	23	22:0	H	HEAD POINTER. FIRST BUFFER TO BE ENQUEUED, AND FIRST BUFFER TO BE DEQUEUED. IF NULL, THE QUEUE IS EMPTY.
HD EOP PKT	1	23	H	IF SET, THE HEAD BID IS THE EOP.
HD SOP PKT	1	23	H	IF SET, THE HEAD BID IS THE SOP.
HD EFCI	1	25	H	EFCI BIT.
CLP	1	26	H	CLP BIT. CAN BE MODIFIED BY DBS.
OAM	1	27	H	OAM BIT.
SPARE	1	28	H	
CLASS	3	31:29	H	CLASS OF FID.
FID TYPE	4	35:32	H	APPLICATION TYPE INDICATES THE PROCESSING THAT THE MS-SAR WILL TAKE ON THIS FLOW. WILL BE SENT TO MEMORY MANAGER. TYPE IS WRITTEN WITH THE HEAD POINTER.

FID DEQUEUE MEMORY LOCATION

FIG. 16

NAME	NO BITS	RANGE	WR	DESCRIPTION
BID TAIL	23	22:0	H	TAIL POINTER. LAST BUFFER TO BE ENQUEUED, AND LAST BUFFER TO BE DEQUEUED. IF NULL, THE QUEUE IS EMPTY.
BID PRV PKT TAIL	23	45:23	H	BID OF PREVIOUS PACKET'S TAIL BID. SAVED ON EOP.
TTL	1	46	H	WHEN 1, DISCARD AND DEACTIVATE THE FID.
OUTPUT PORT#	7	53:47	S	OUTPUT PORT NUMBER THAT THE FID WILL BE TRANSMITTED ON.
Q SIZE	18	71:54	H	SIZE OF THE QUEUE IN BIDS. INCREMENTED ON ENQUEUE. DECREMENTED ON EVERY DEQUEUE OPERATION.

FIRST FID ENQUEUE MEMORY LOCATION

FIG. 17

10/45

NAME	NO BITS	RANGE	WR	DESCRIPTION
VALID	1	0	S	IF SET, THEN ENQUEUE. IF NOT, THEN SETUP CONNECTION COMMAND AS NEEDED BEFORE ENQUEUE STARTS.
SPARE	8	8:1		
DROP UNTIL SOP	1	9	H	DROP UNTIL THE NEXT SOP.
SEL DROP COUNT ER	1	10	H	SEL THE COUNT FOR DROPPING.
SPARE	2	12:11		
CURRENT TAIL PKT CELL CNT	11	23:13	H	REPRESENTS THE NUMBER OF CELLS IN THE TAIL PACKET THAT IS BEING ENQUEUED.
SPARE	2	25:24		
ENQ NOT DISCARD RED PKT COUNT	16	41:26	H	THE NUMBER OF NOT DISCARDED PACKETS THAT HAVE ARRIVED SINCE LAST RED DISCARD. IT IS RESET ON THE NEXT RED DISCARD.
SPARE	2	43:42		
AVG	18	61:44	H	THE AVE SIZE OF THE QUEUE.

SECOND FID ENQUEUE MEMORY LOCATION

FIG. 18

NAME	NO BITS	RANGE	WR	DESCRIPTION
BID LINK	23	22:0	H	BID OF THE NEXT BUFFER IN FID QUEUE. ALSO CAN BE A BID LINKED ON THE FREE BUFFER QUEUE.
EOP PKT	1	23	H	END OF PACKET FOR THIS BID BID. EOP BELONGS TO THE BID LINK.
SOP PKT	1	24	H	START OF PACKET FOR THE CORRESPONDING BID. SOP BELONGS TO THE BID LINK.
EFCI	1	25	H	EFCI PASS THROUGH BIT.
OAM	1	26	H	OAM BIT.
CLP	1	27	H	CLP
SPARE	8	35:28		

BID MEMORY LOCATION

FIG. 19

FIG. 18 - ENQUEUE

PORT CALENDAR IN REASSEMBLY BLOCK

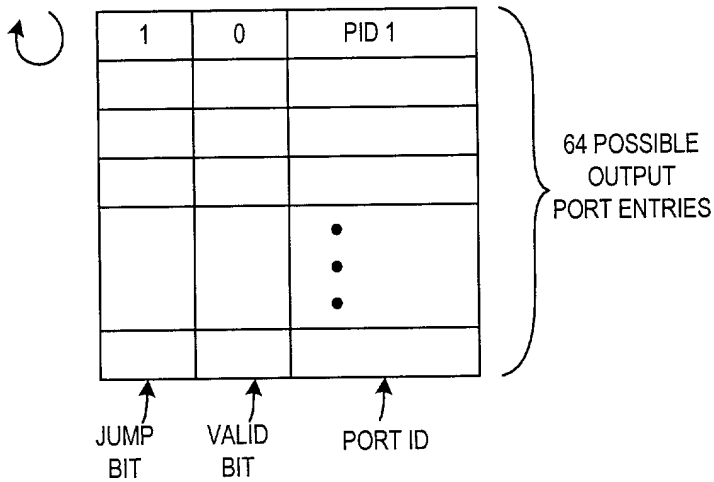
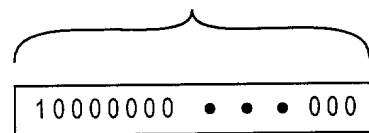


FIG. 24

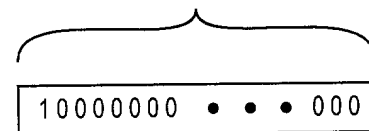
64 BITS



PORT EMPTY REGISTER

FIG. 25

64 BITS



PORT FULL REGISTER

FIG. 26

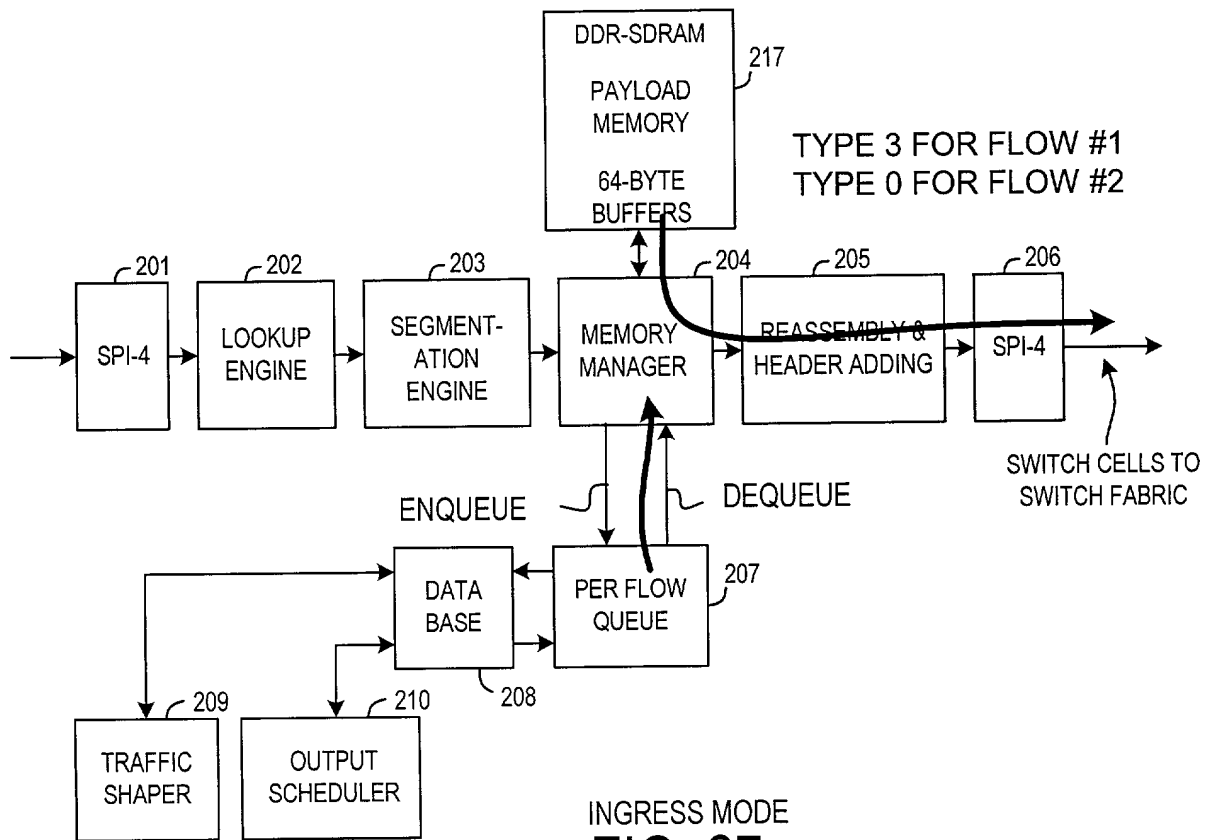


FIG. 27

12/45

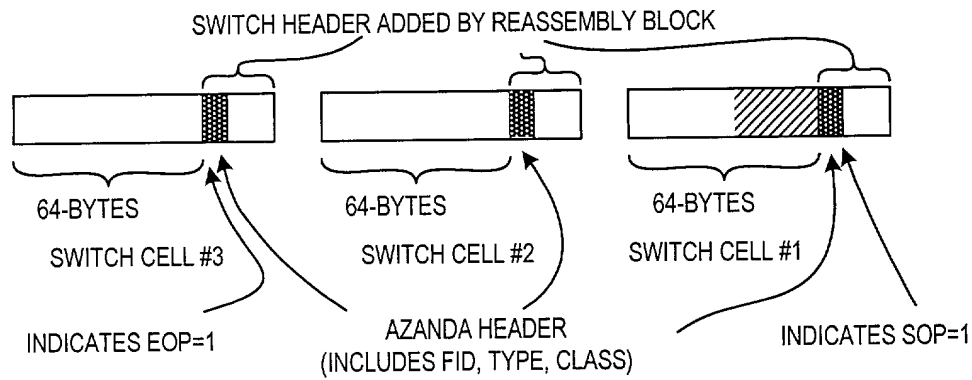


FIG. 28

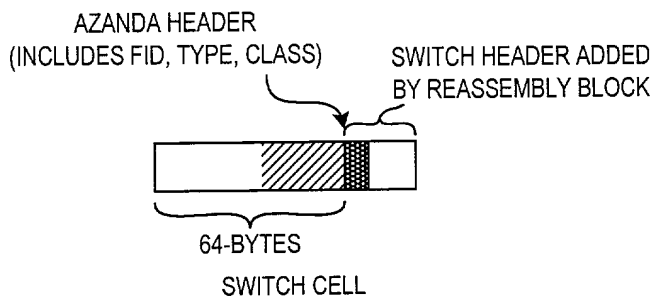


FIG. 29

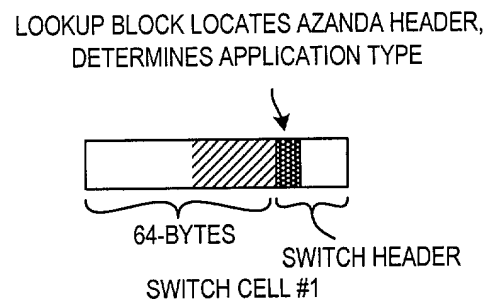


FIG. 31

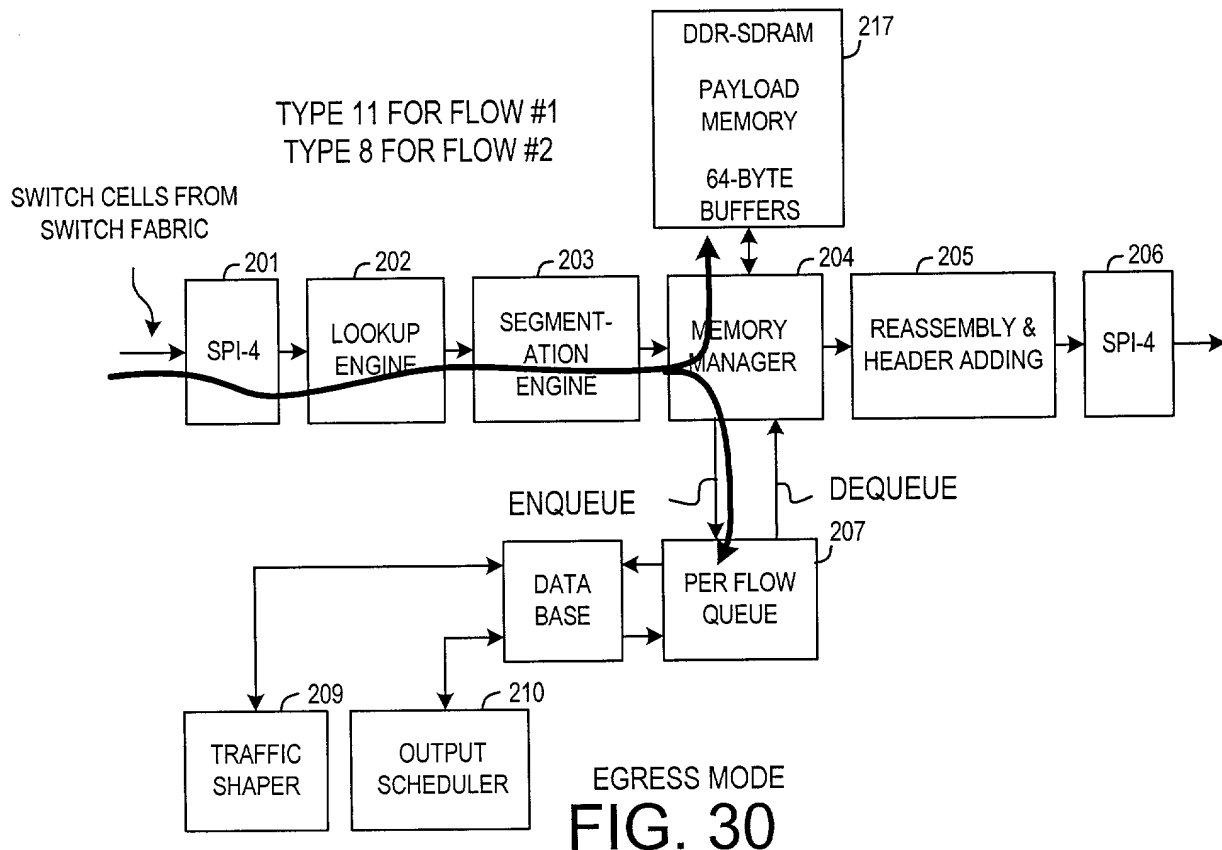
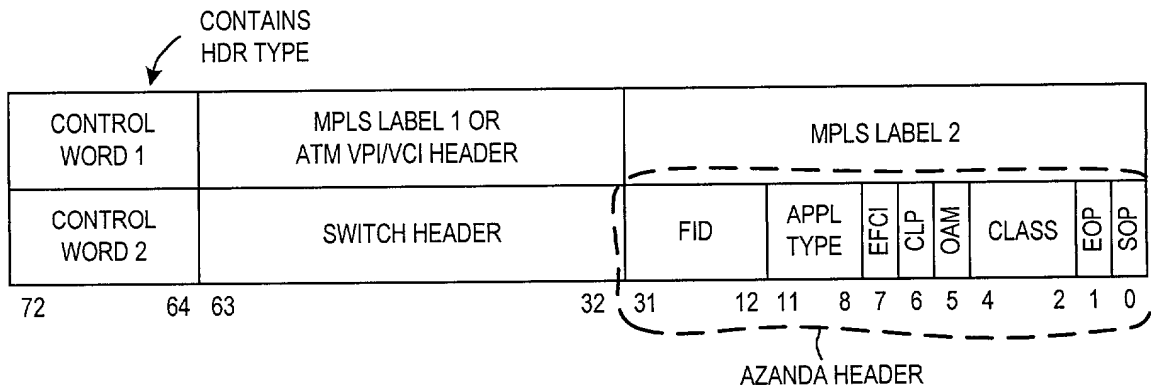
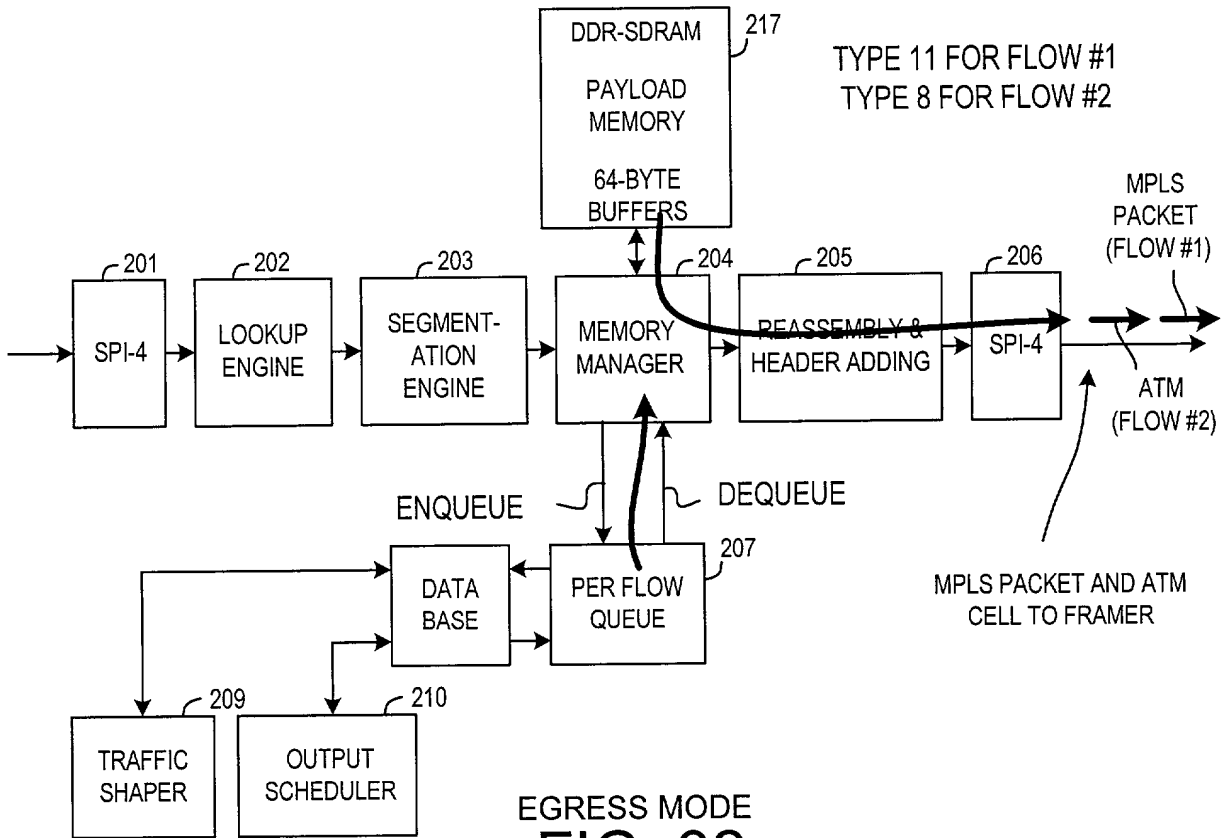


FIG. 30

US 2013/0156555 A1



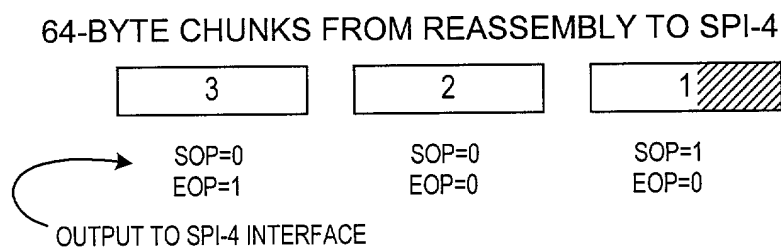


FIG. 34

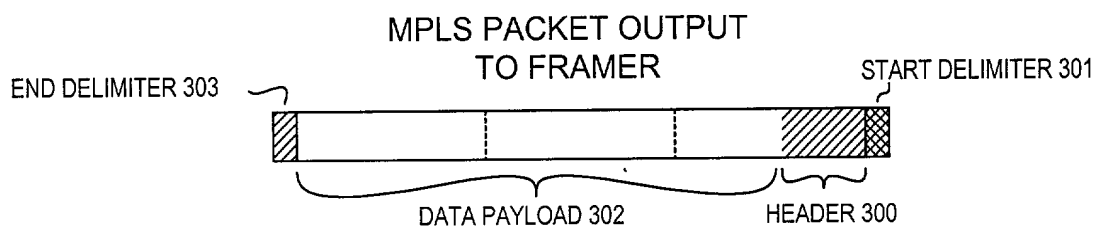


FIG. 35

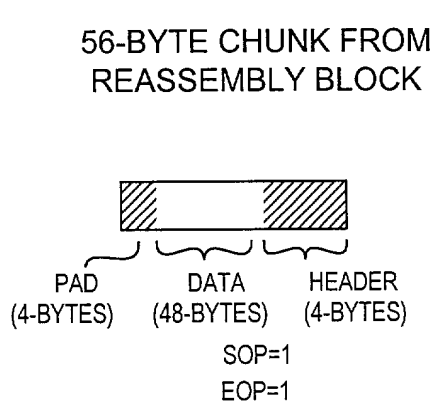


FIG. 36

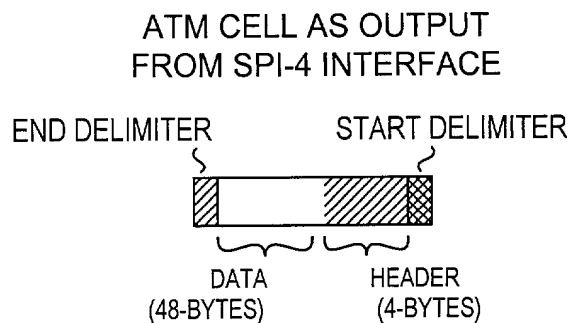


FIG. 37

15/45

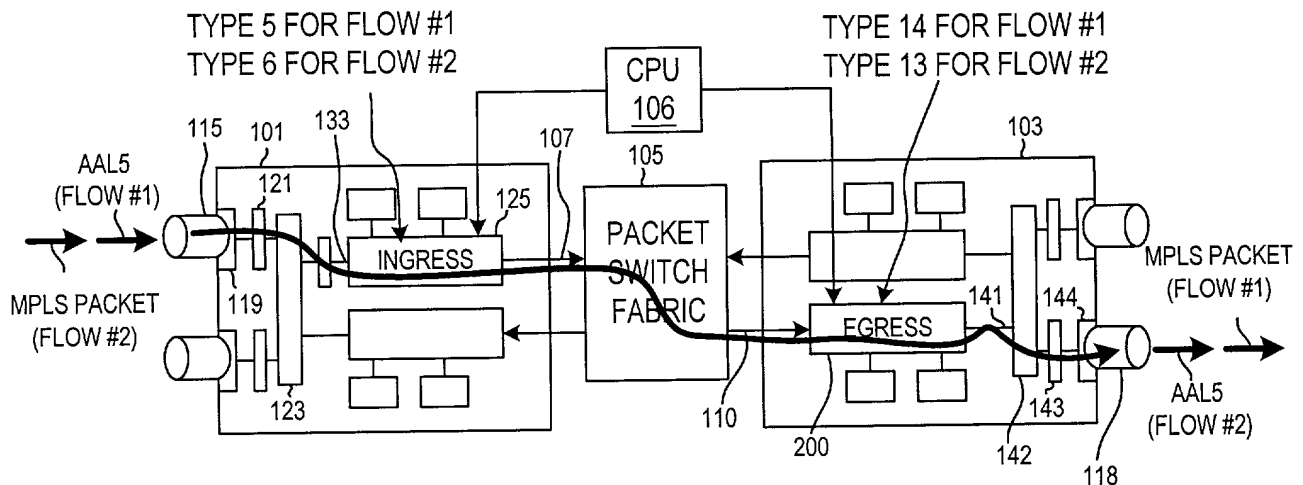


FIG. 38

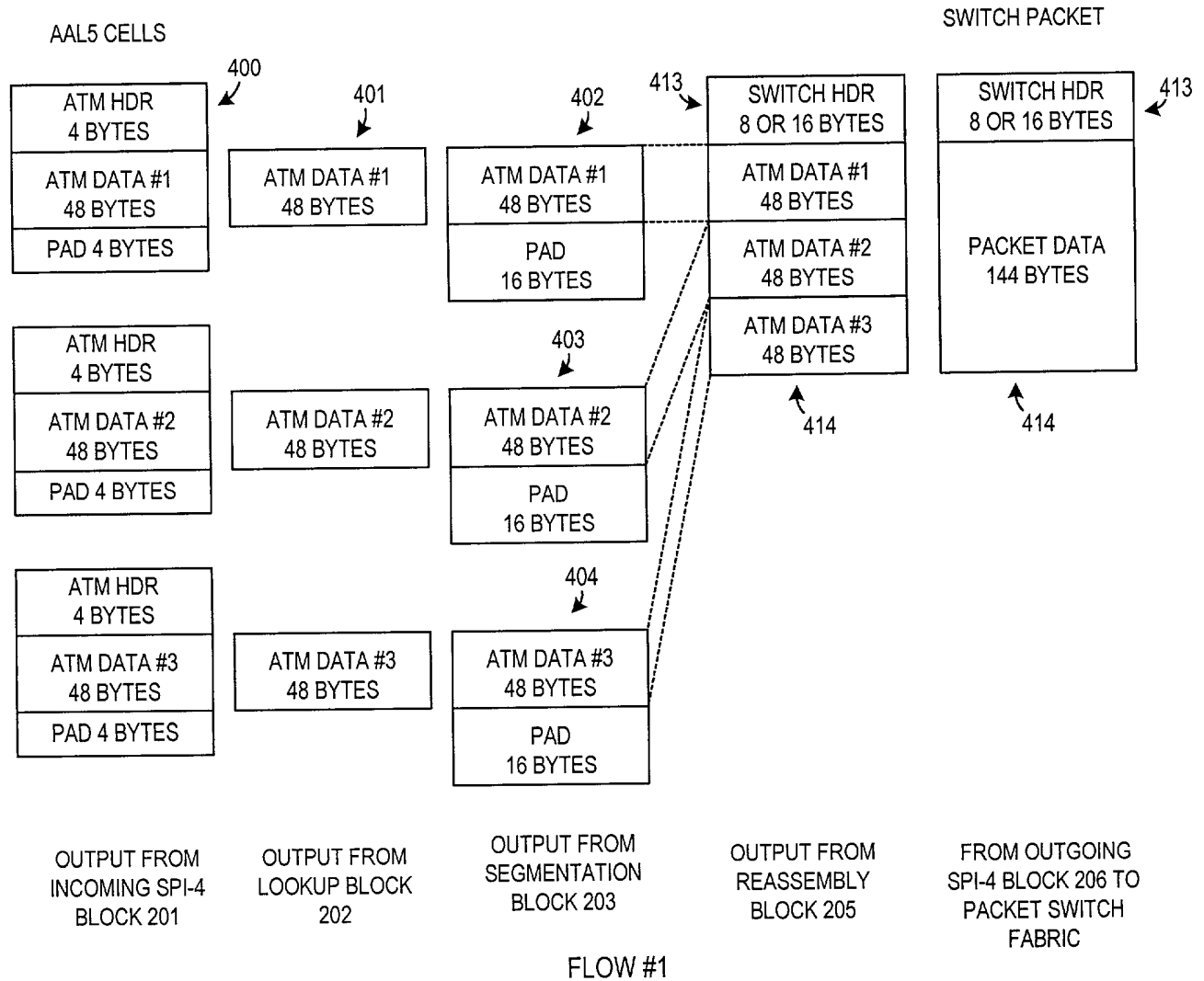
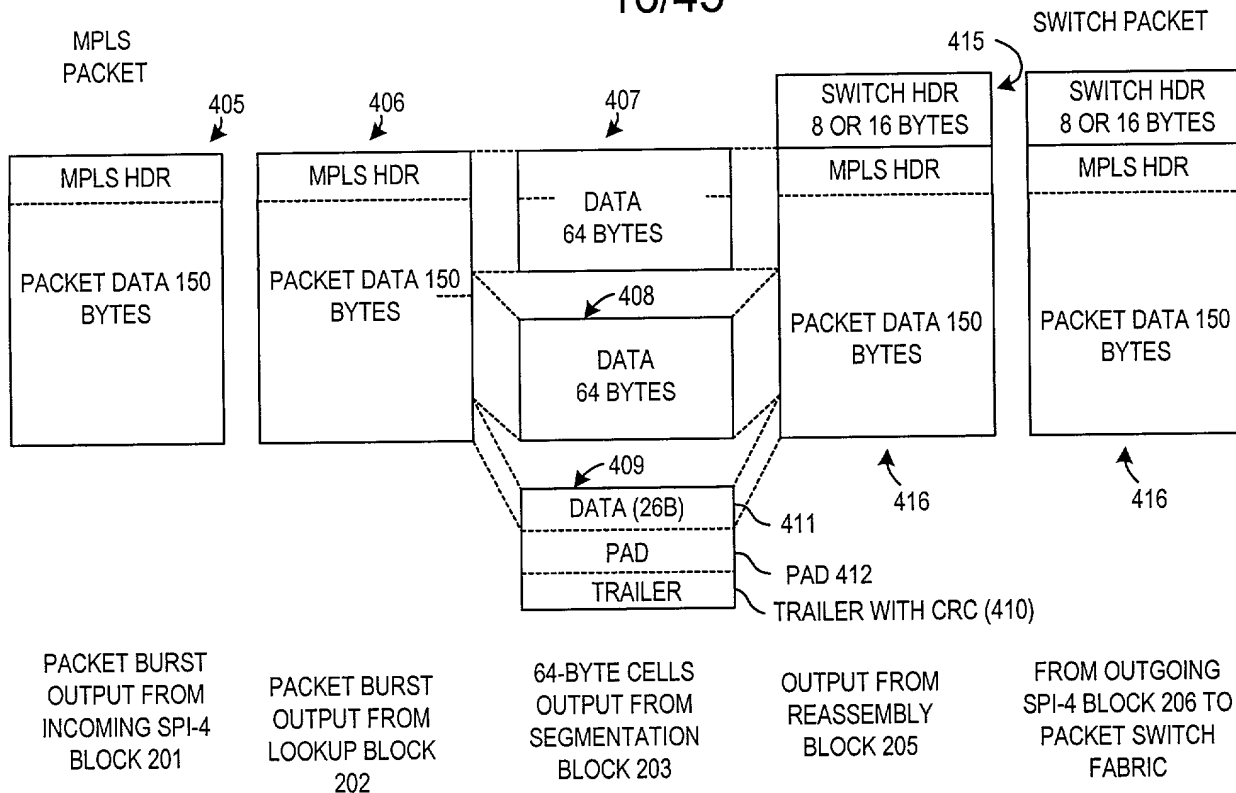


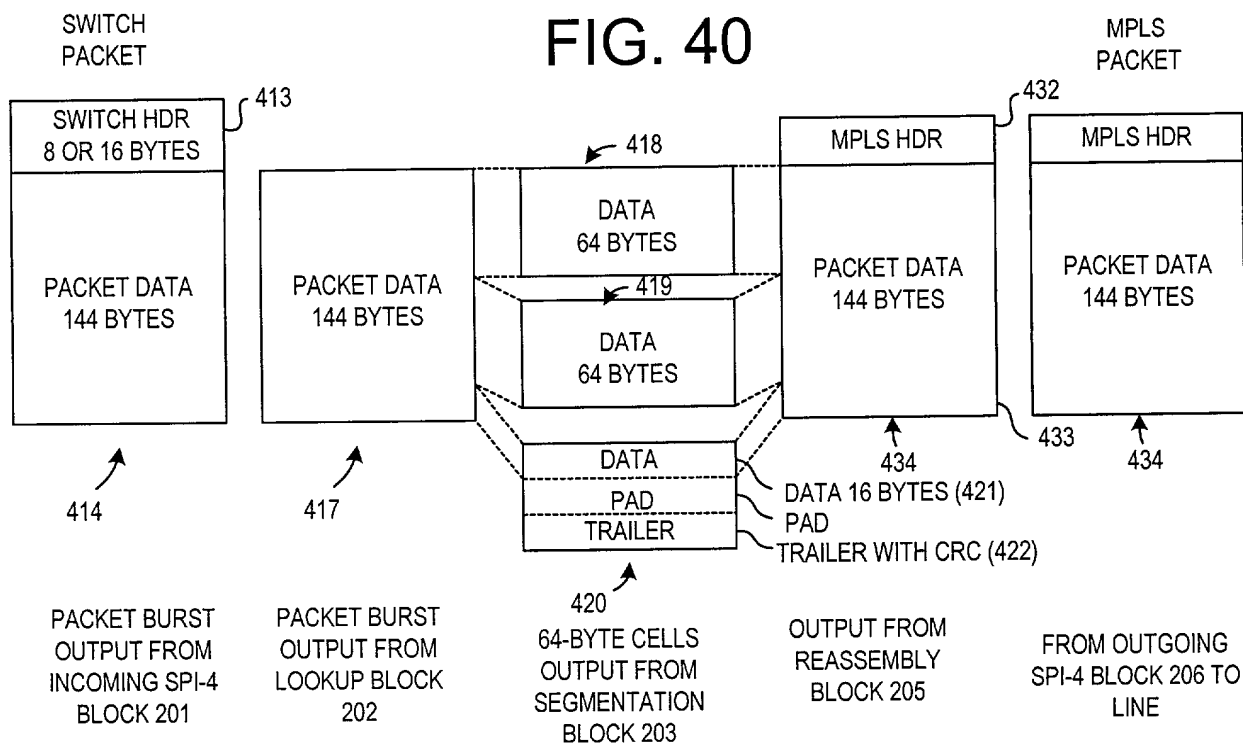
FIG. 39

16/45



FLOW #2
INGRESS APPLICATION TYPE 6

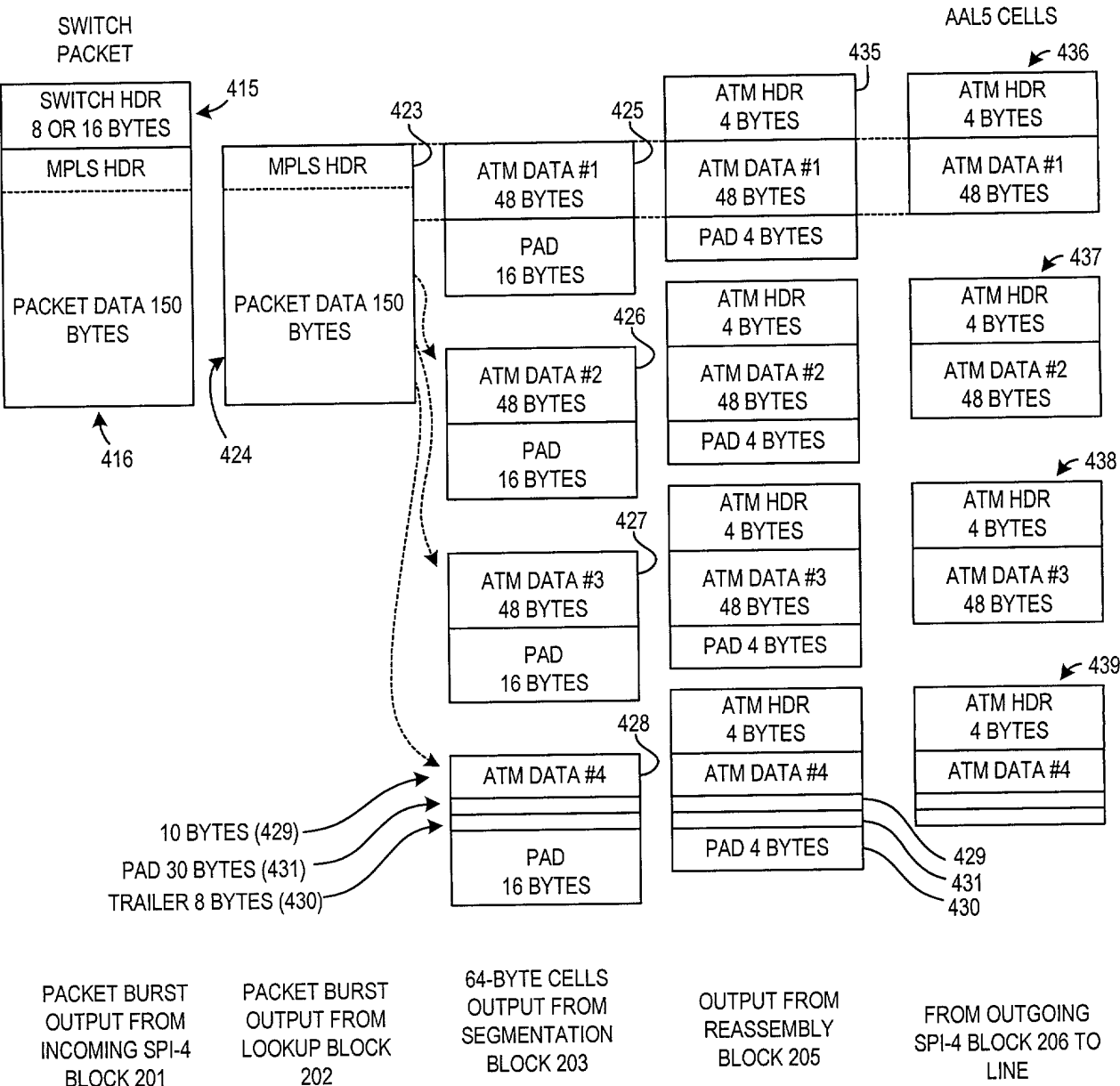
FIG. 40



FLOW #1
EGRESS APPLICATION TYPE 14

FIG. 41

FIG. 42



FLOW #2
EGRESS APPLICATION TYPE 13

FIG. 42

18/45

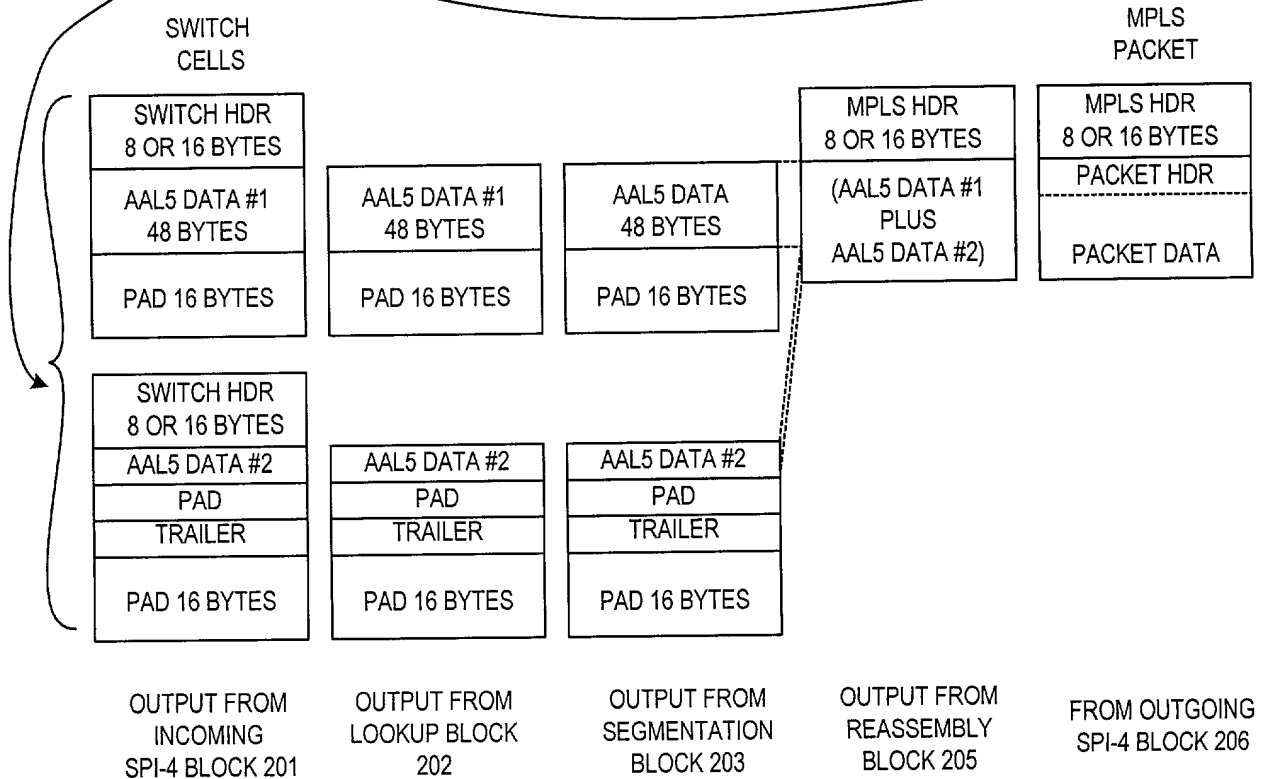
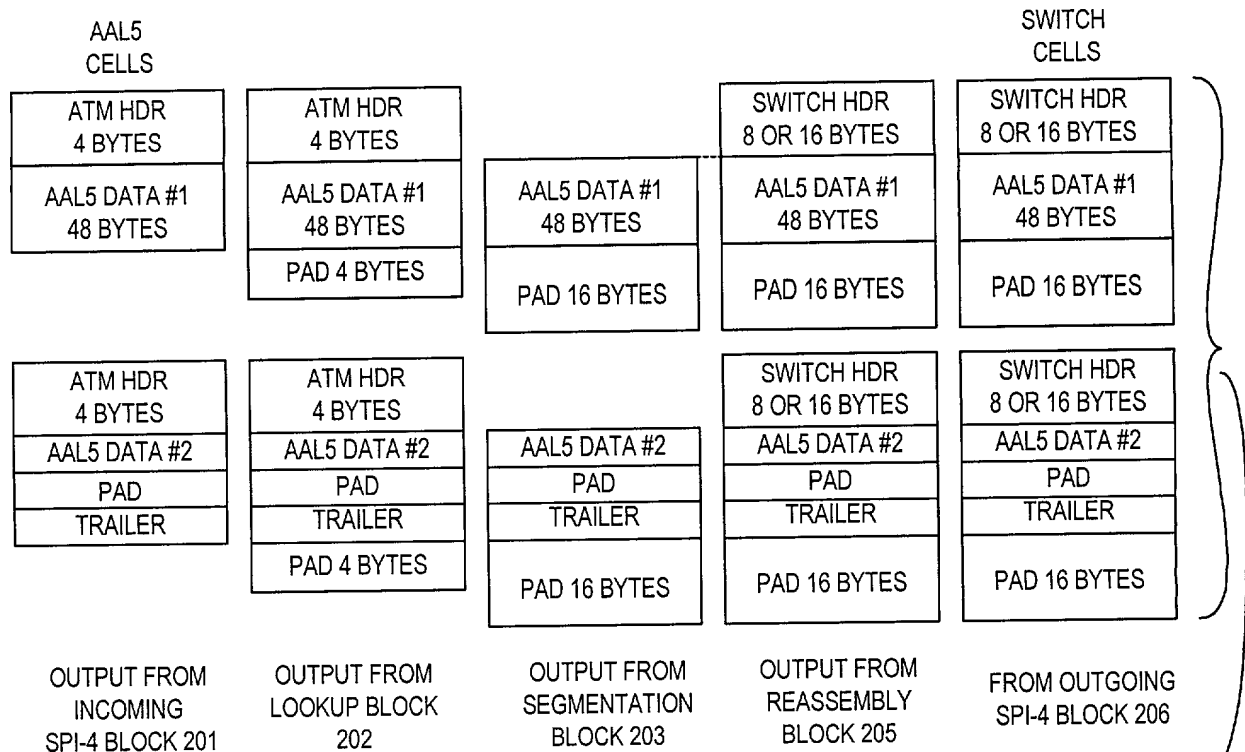
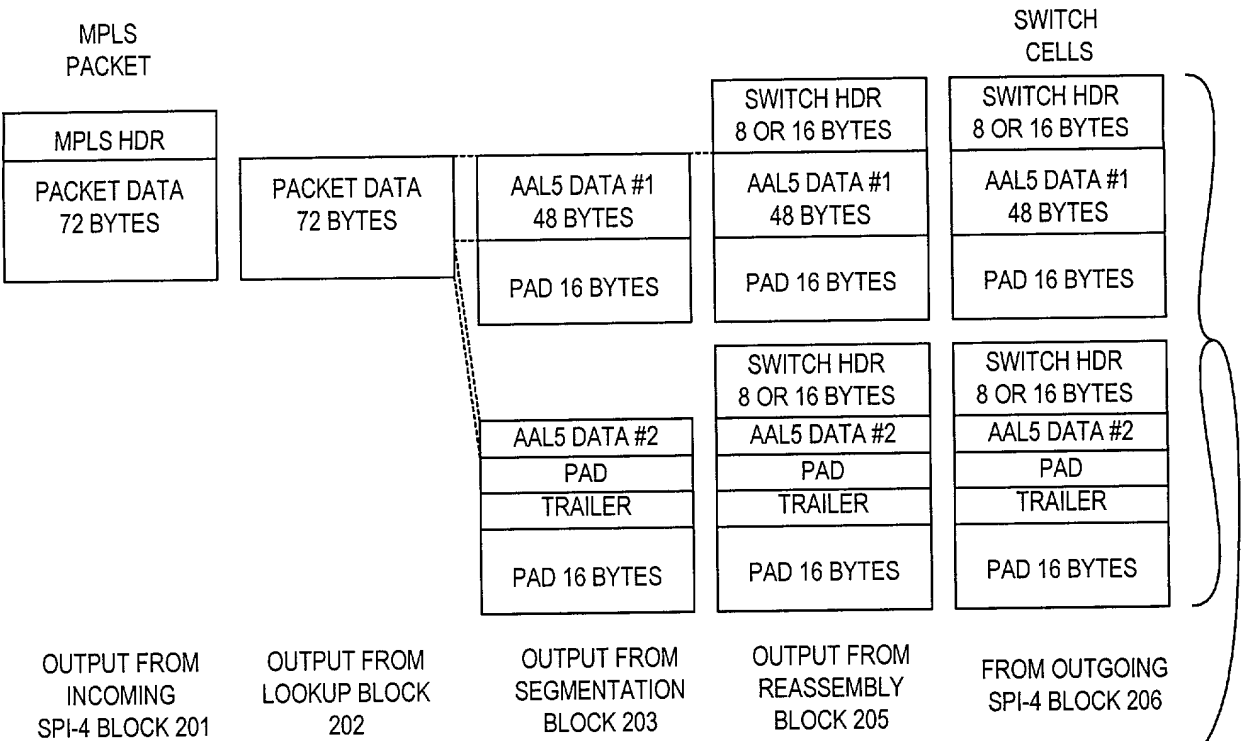
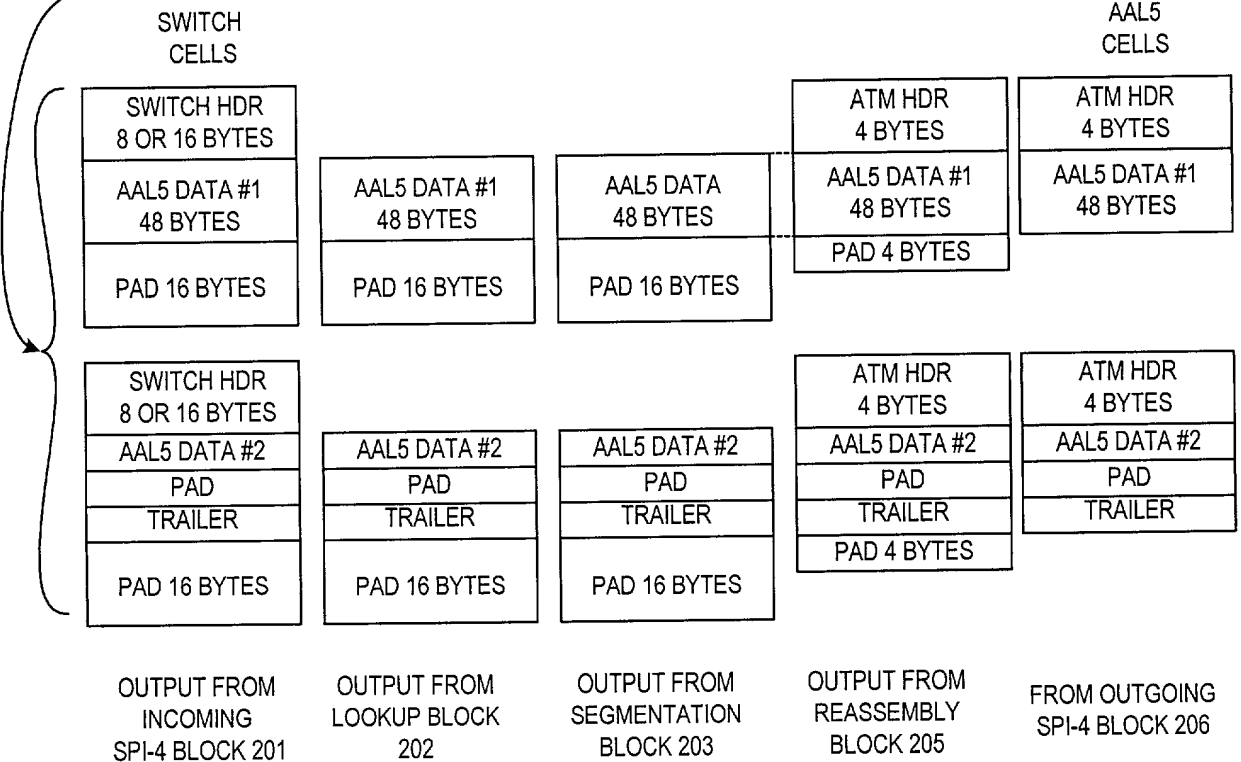


FIG. 43



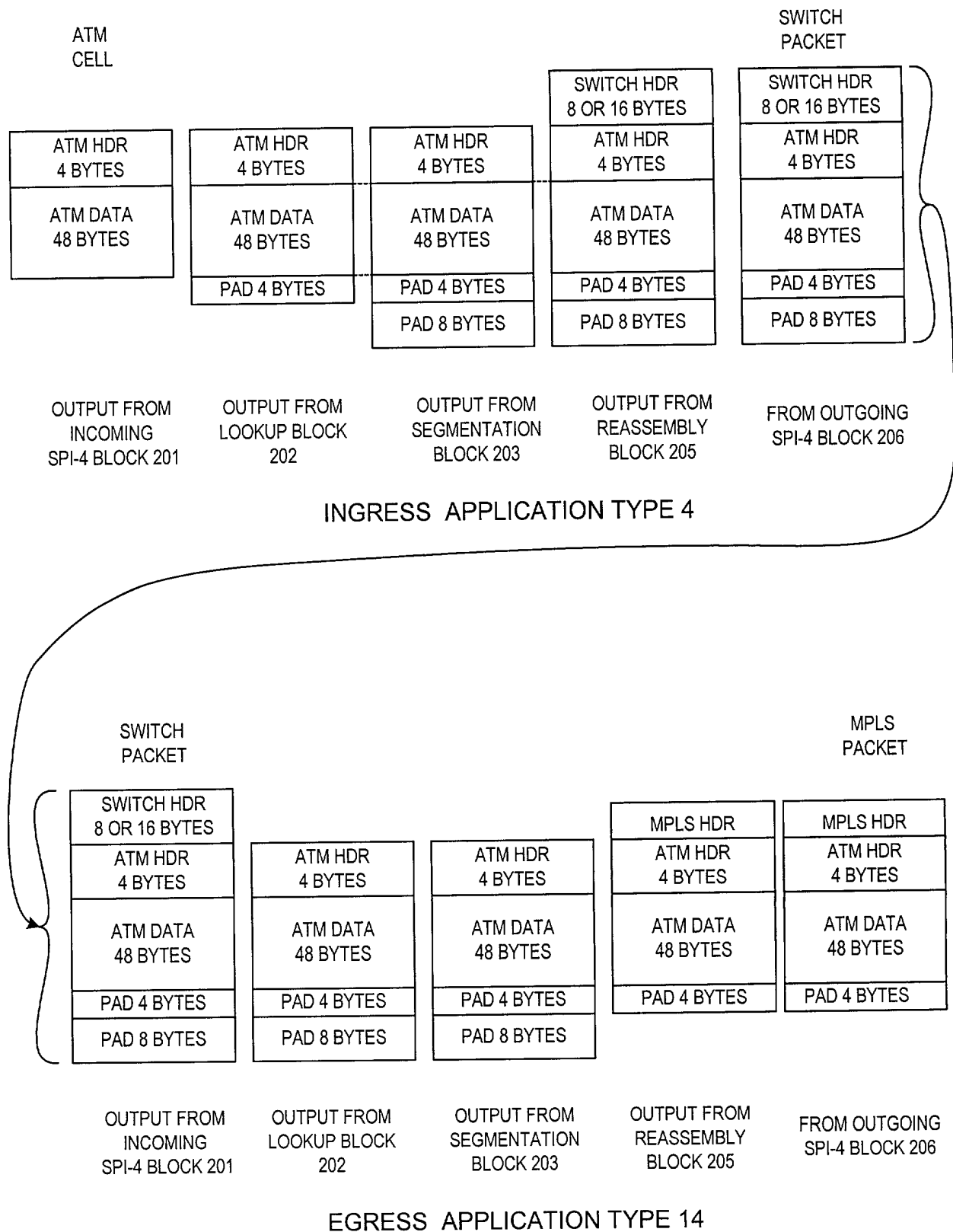
INGRESS APPLICATION TYPE 2



EGRESS APPLICATION TYPE 10

FIG. 44

FIG. 45



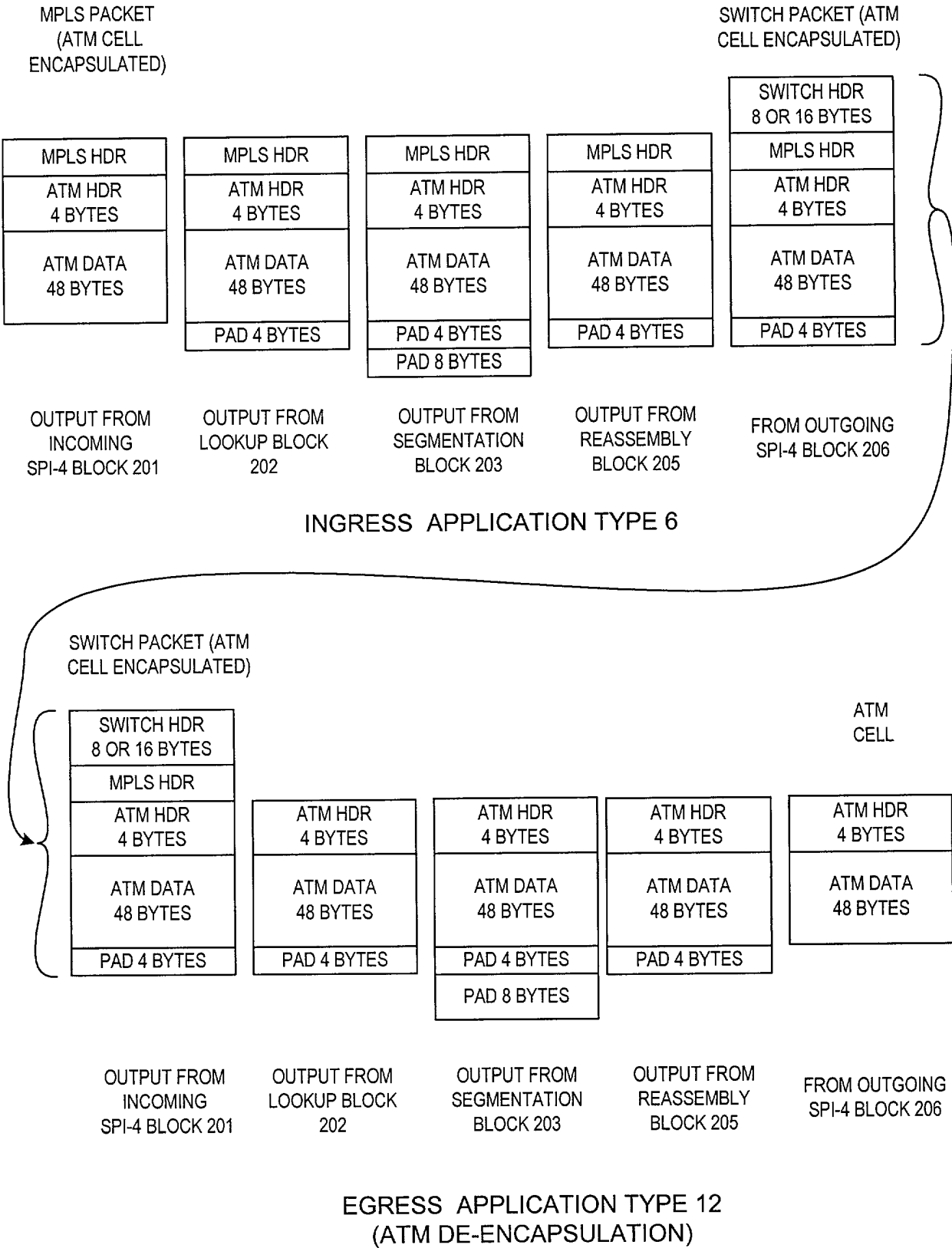


FIG. 46

22/45

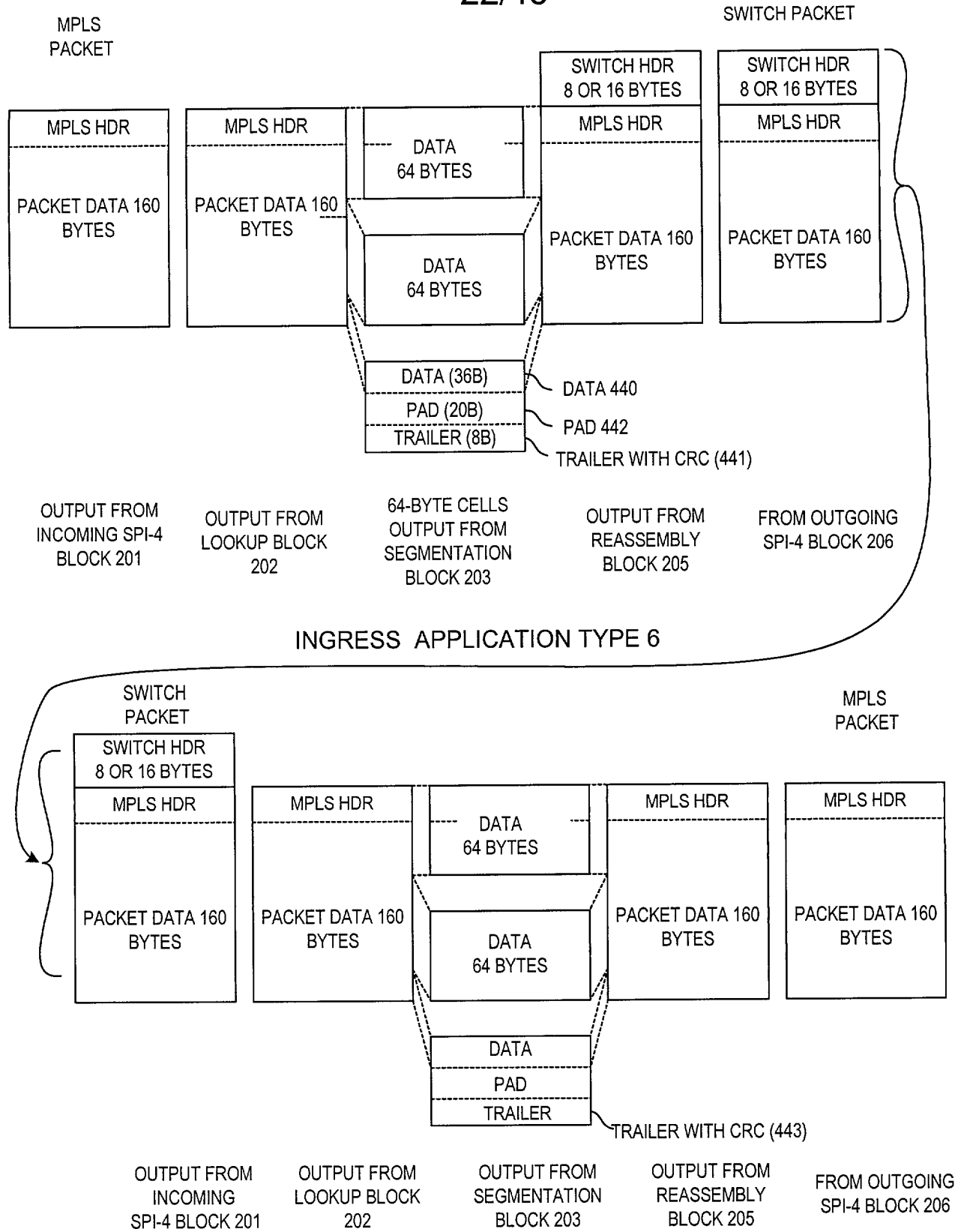


FIG. 47

23/45

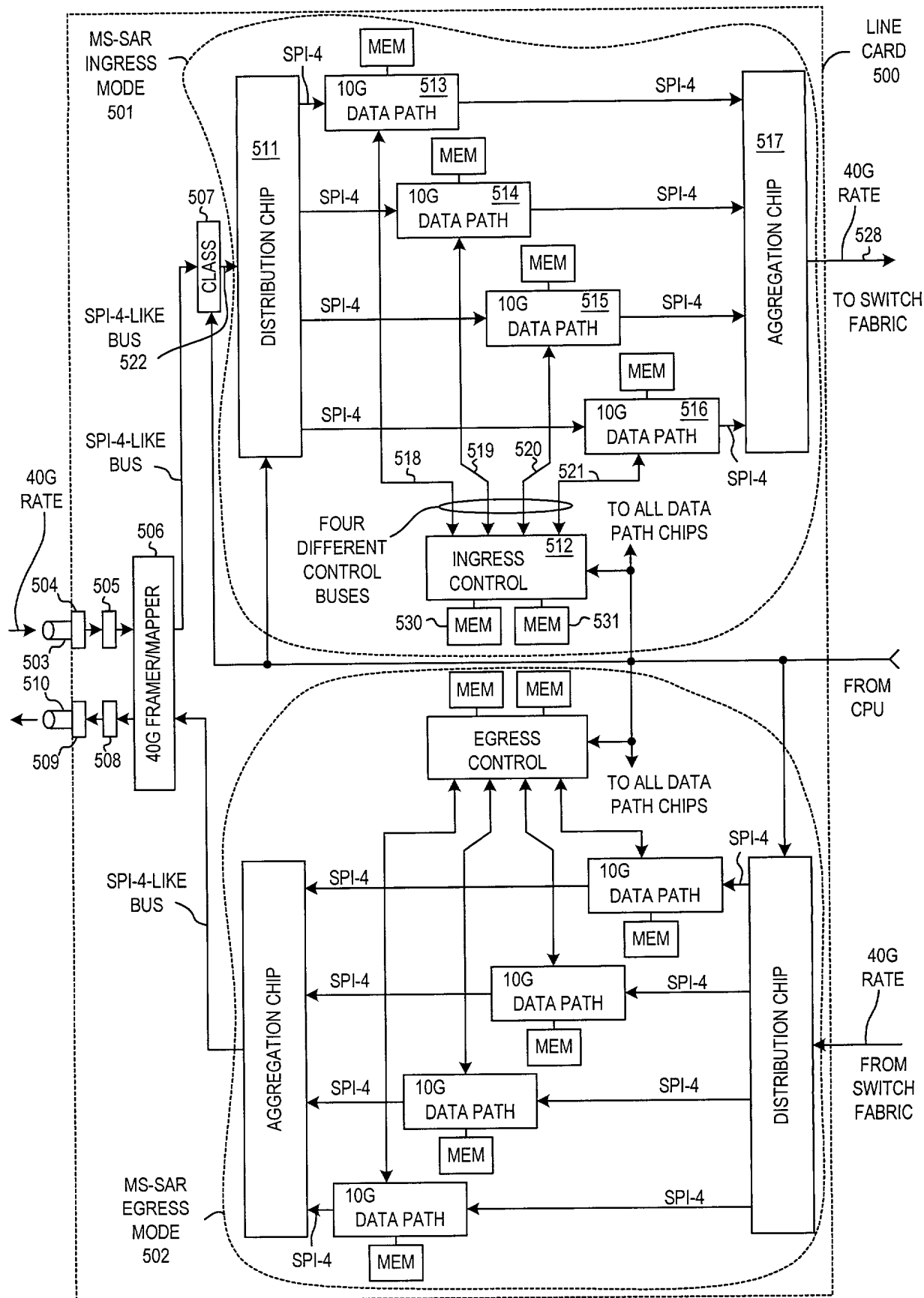


FIG. 48

24/45

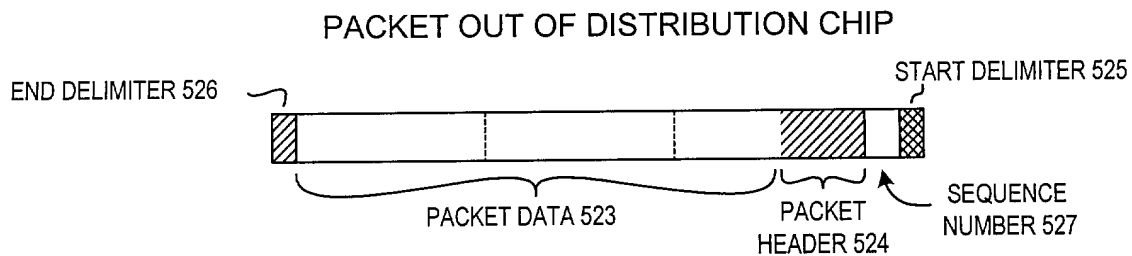
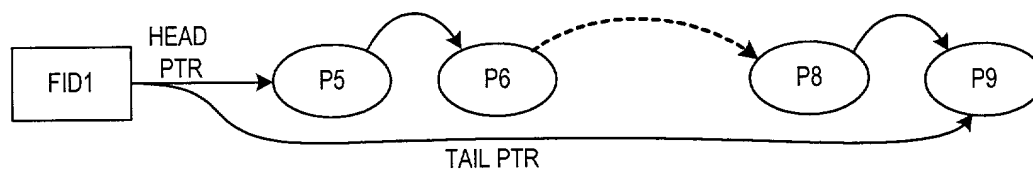
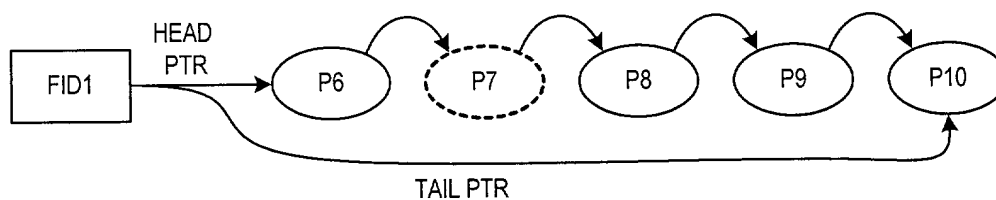


FIG. 49



PACKET QUEUE

FIG. 50



PACKET QUEUE

FIG. 51

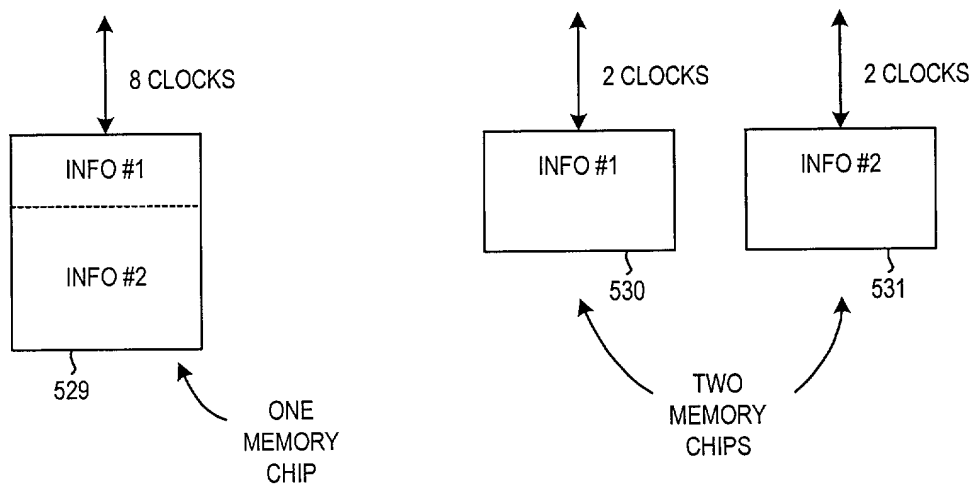


FIG. 52

FIG. 49

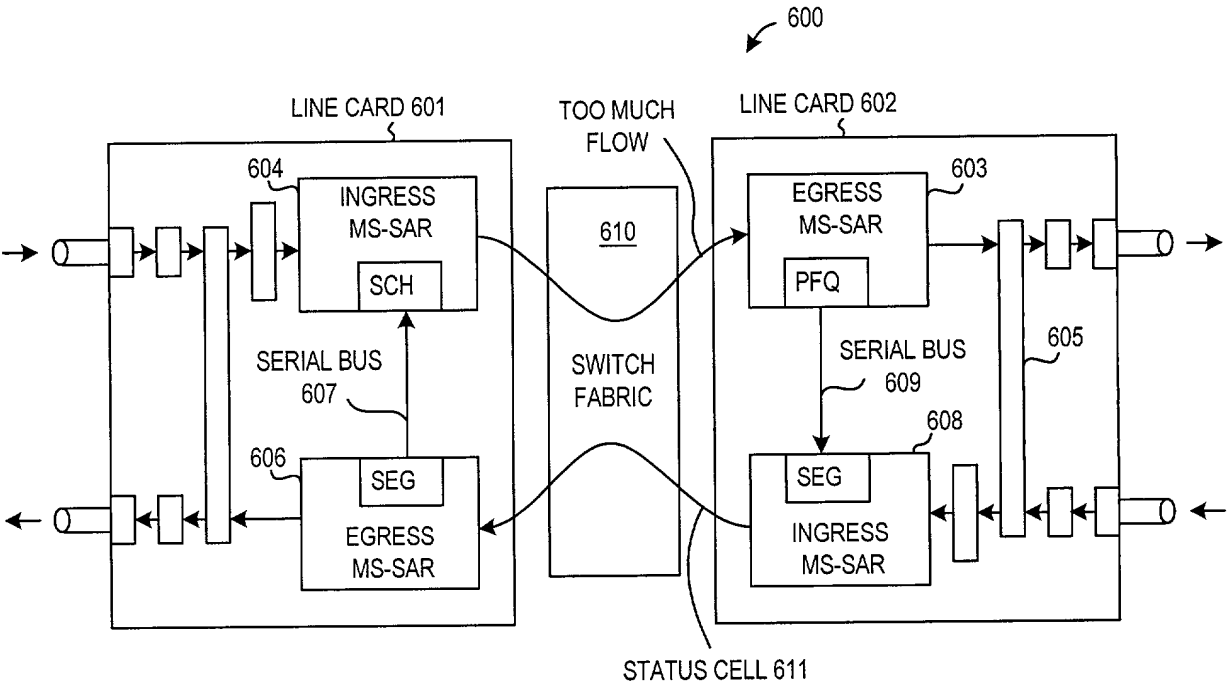
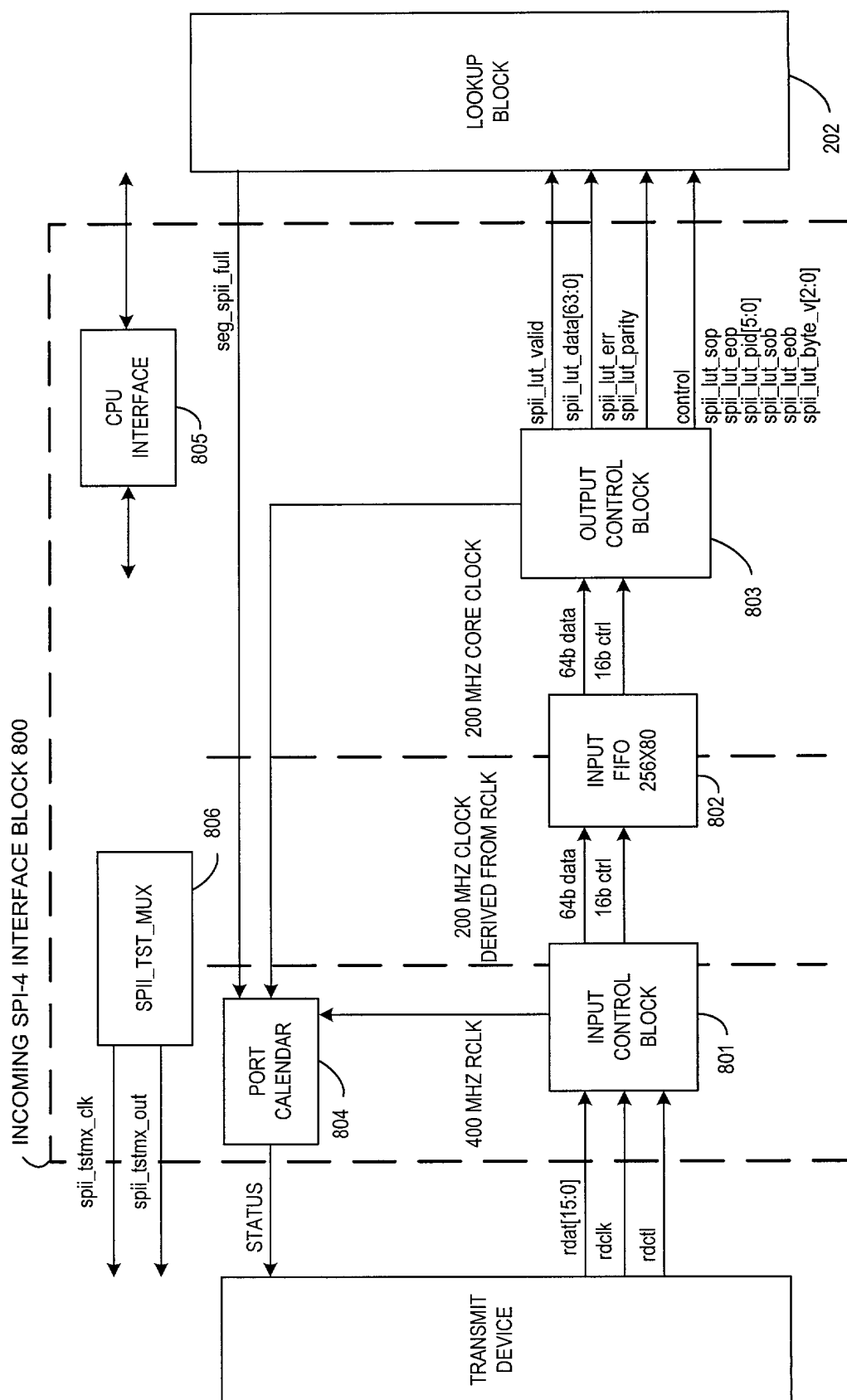


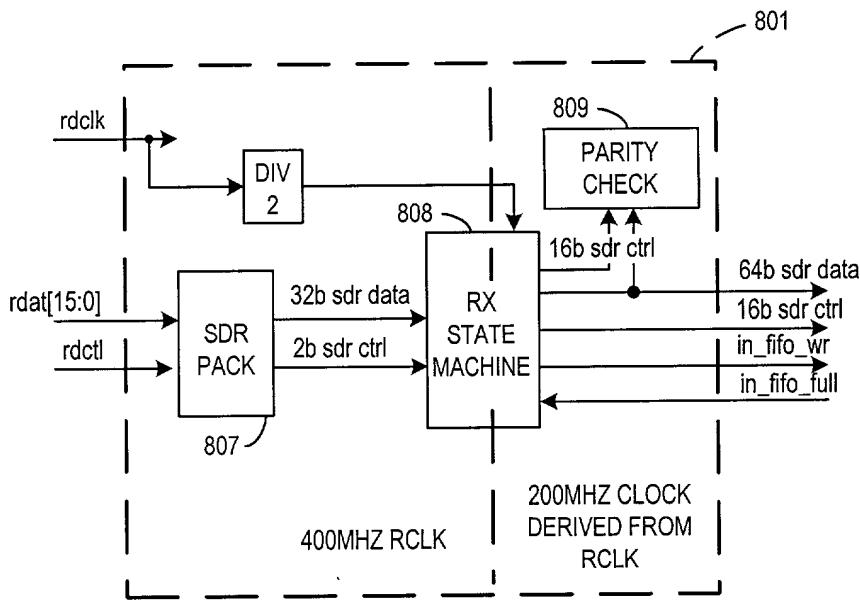
FIG. 53

FIG. 53

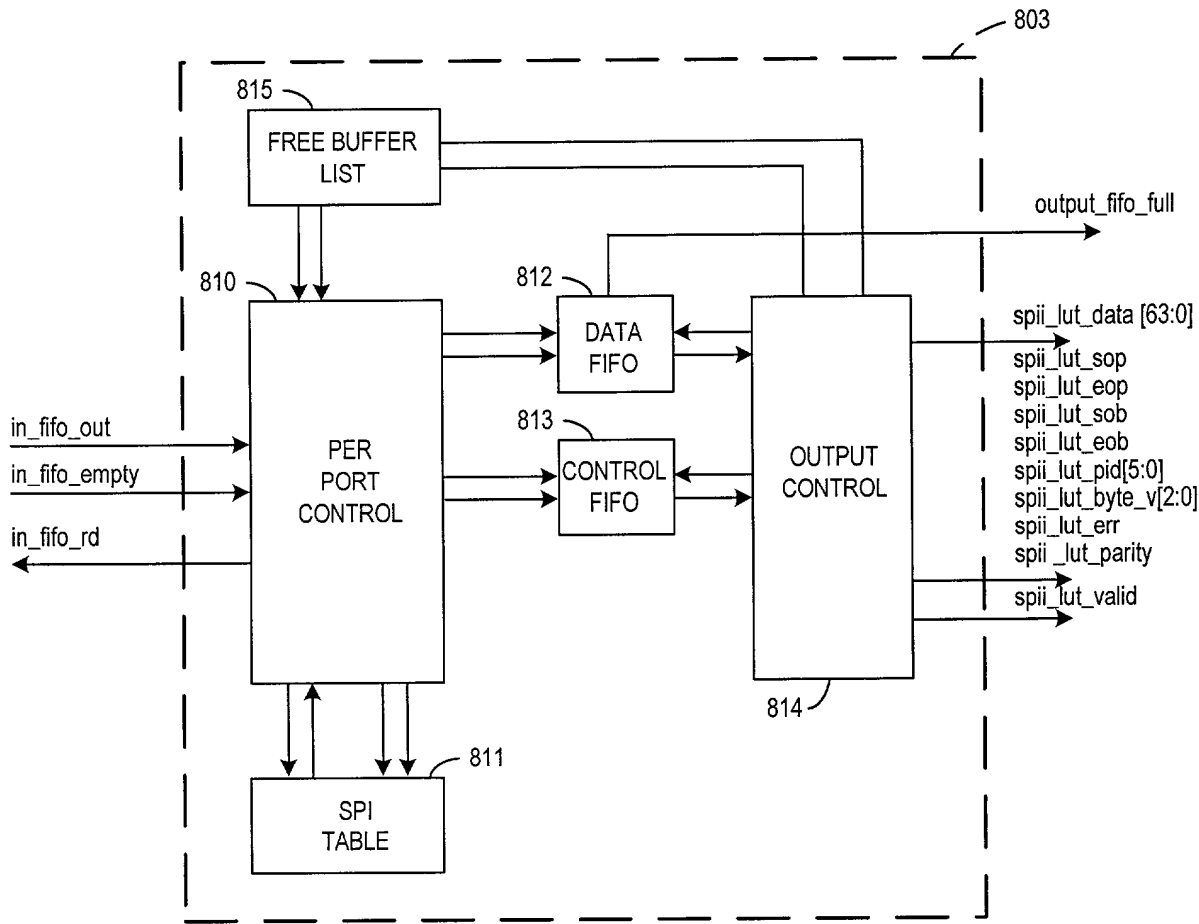


INCOMING SPI-4 INTERFACE BLOCK

FIG. 54



INPUT CONTROL BLOCK
FIG. 55



OUTPUT CONTROL BLOCK
FIG. 56



FIG. 57

FIG. 58

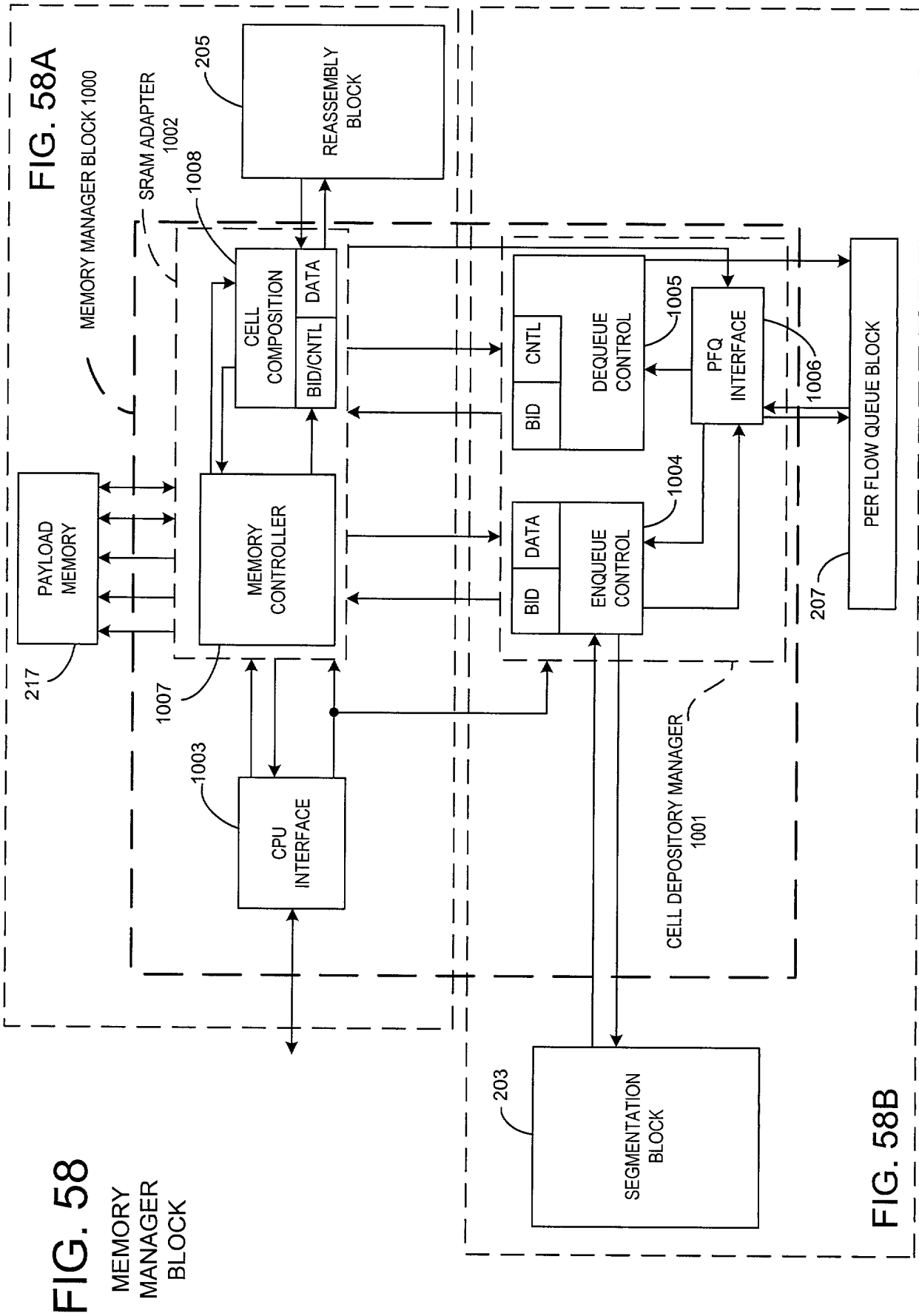
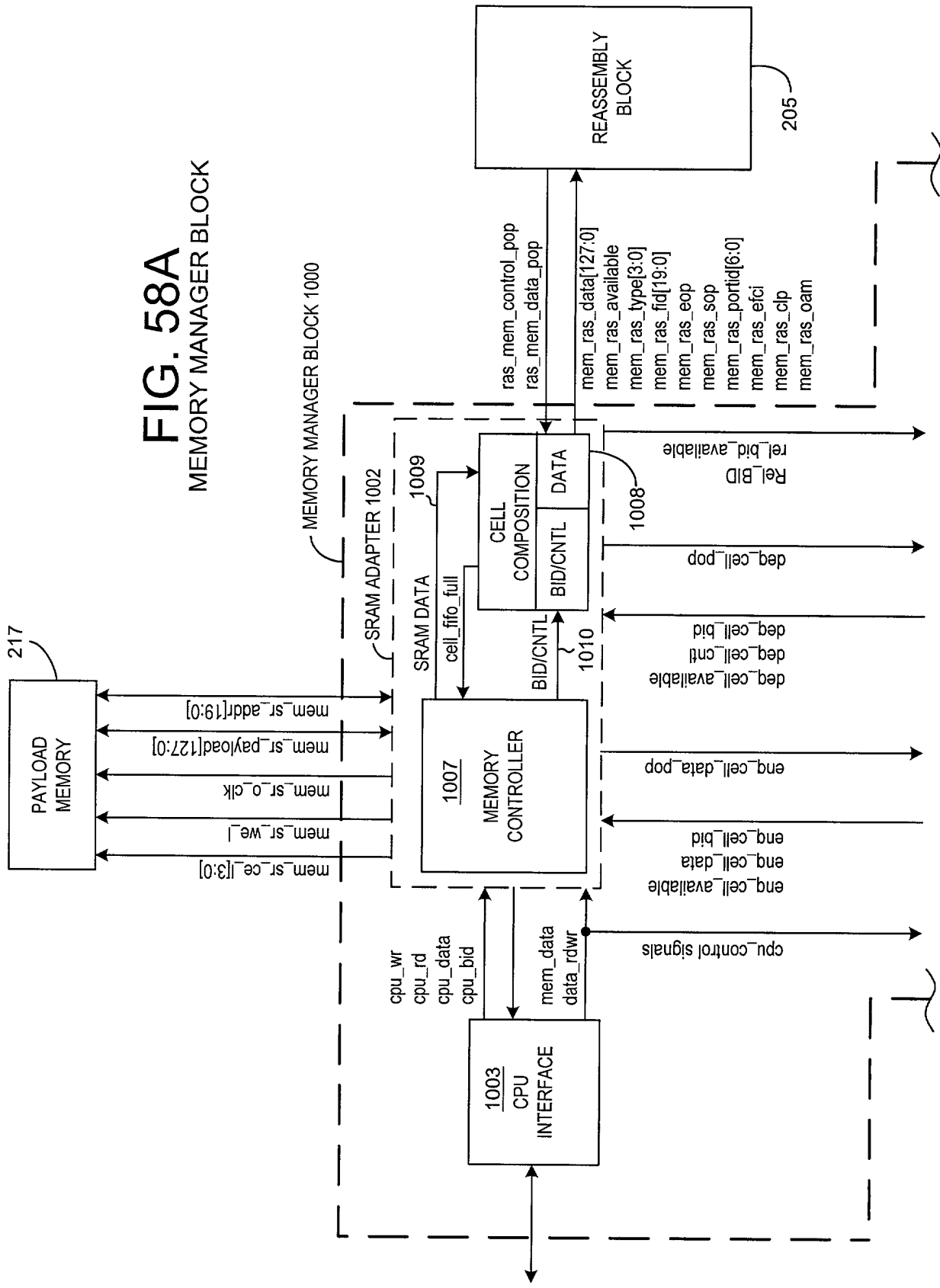


FIG. 58A



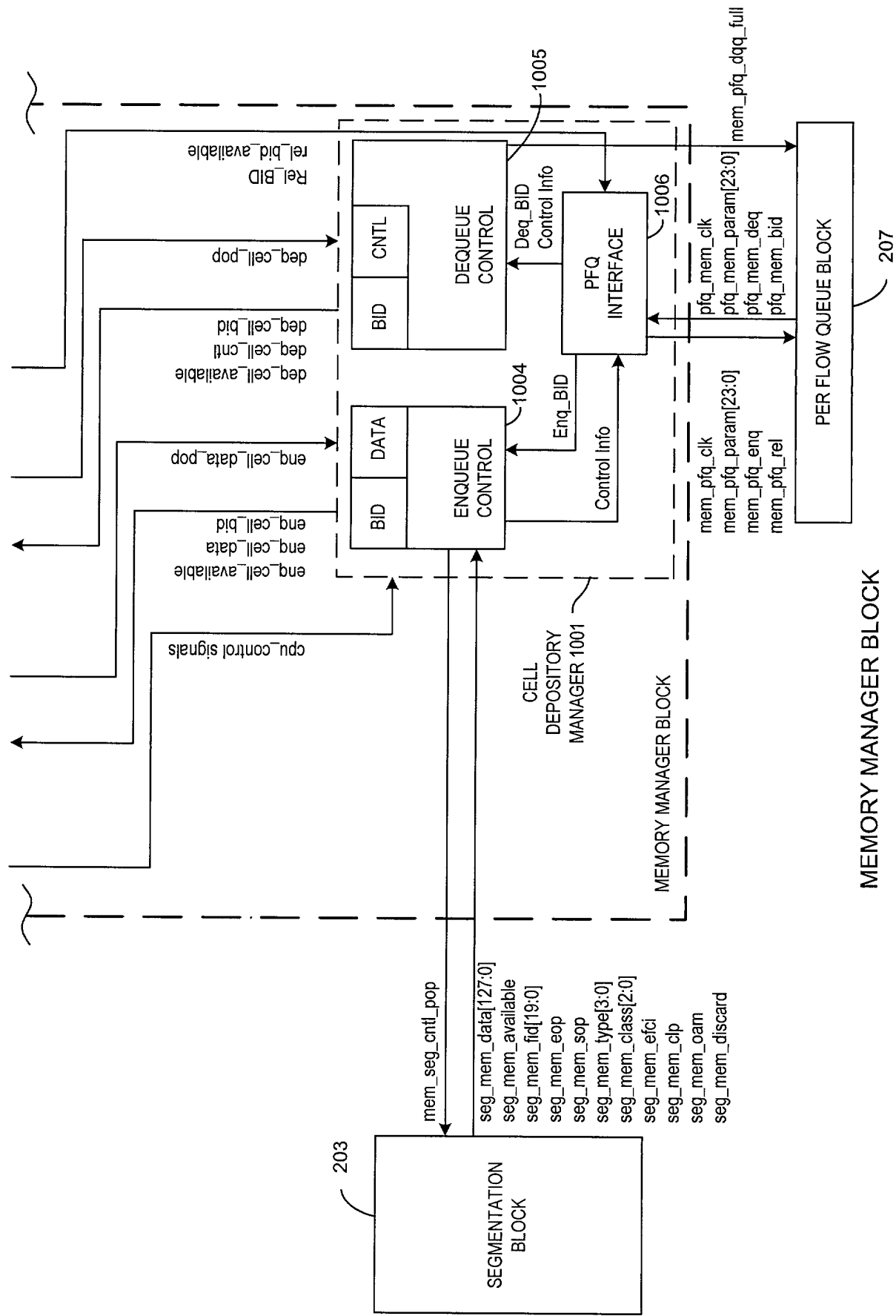
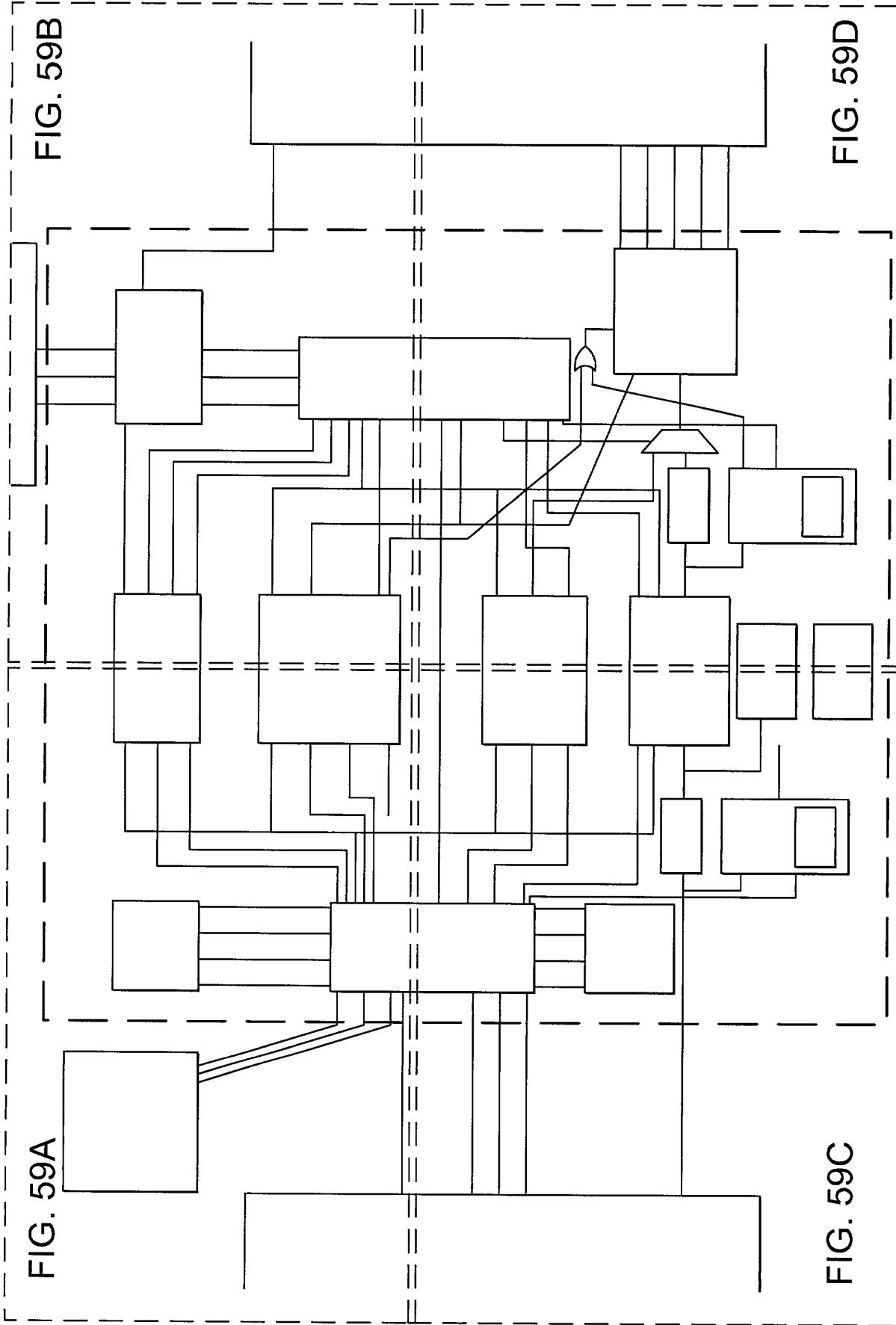


FIG. 58B

FIG. 59A



REASSEMBLY BLOCK

FIG. 59

TOP SECRET

FIG. 59A

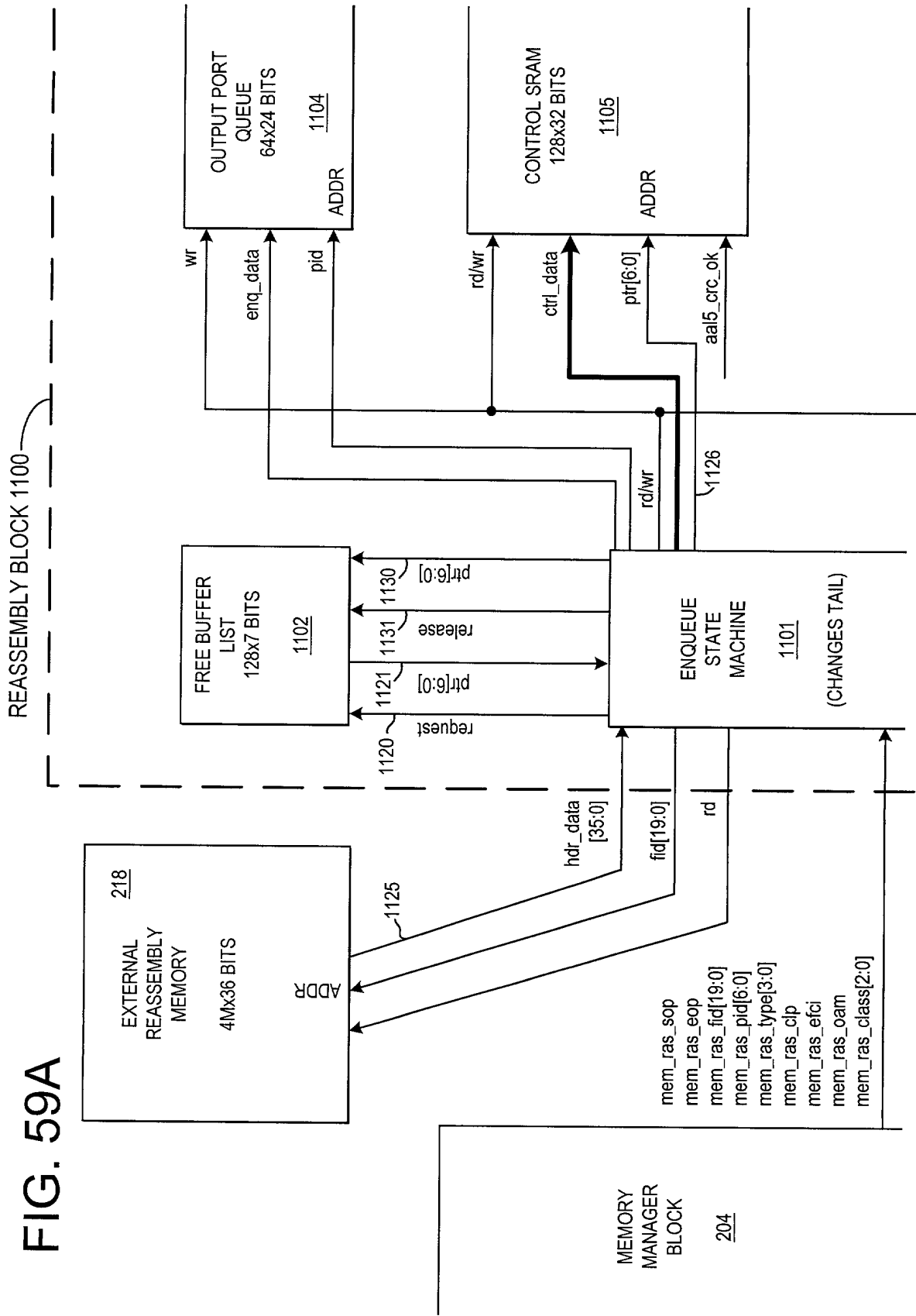
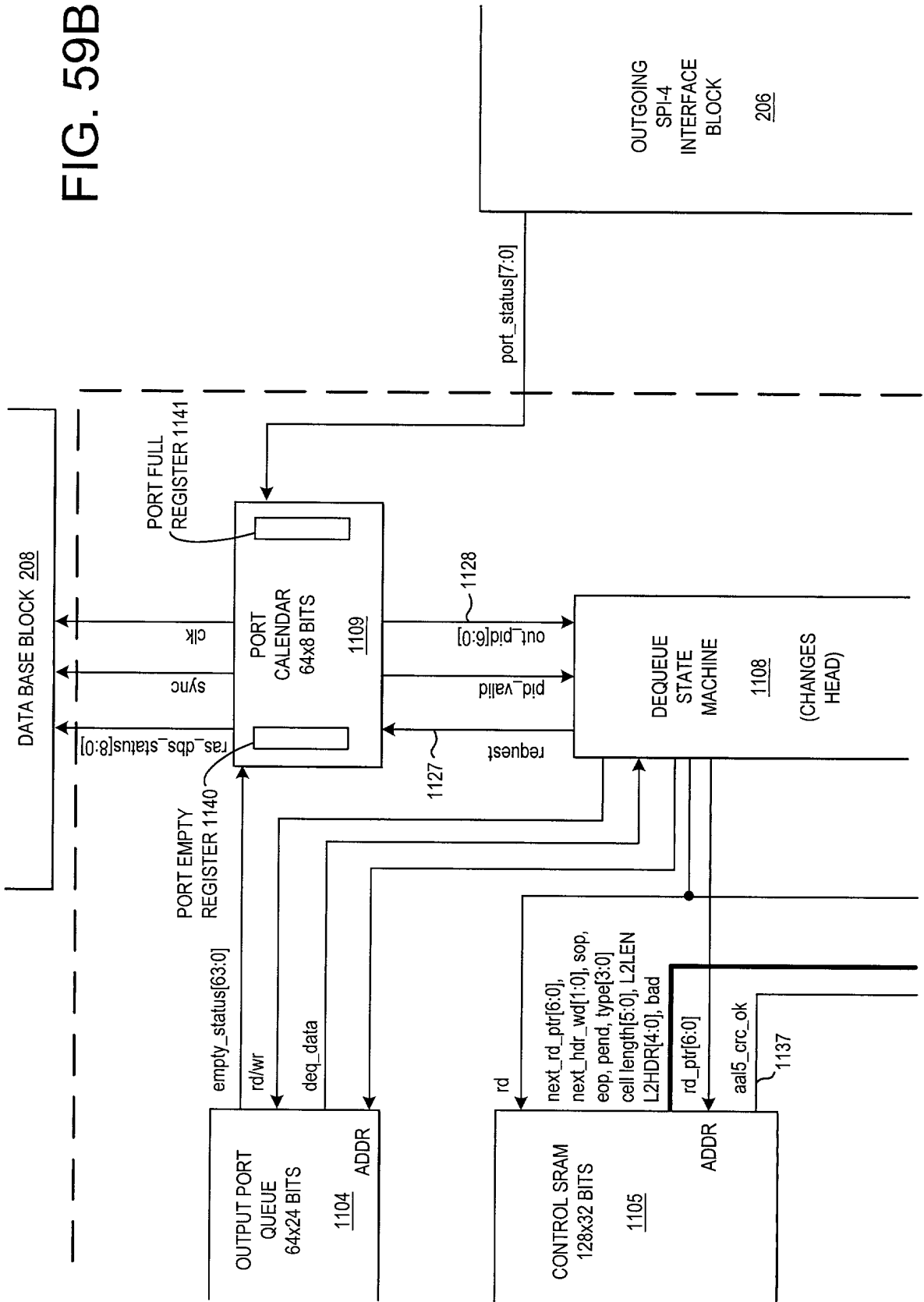


FIG. 59B



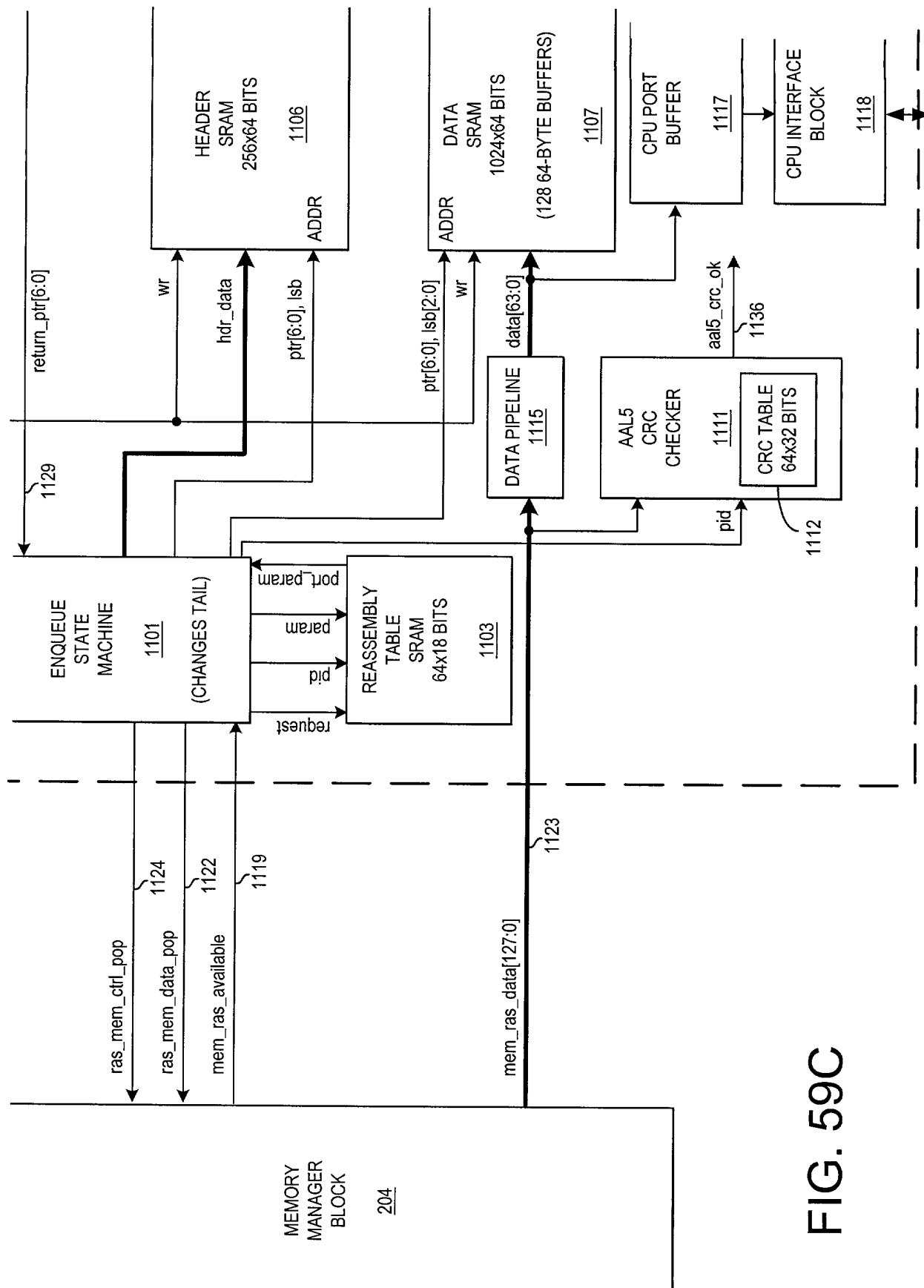


FIG. 59C

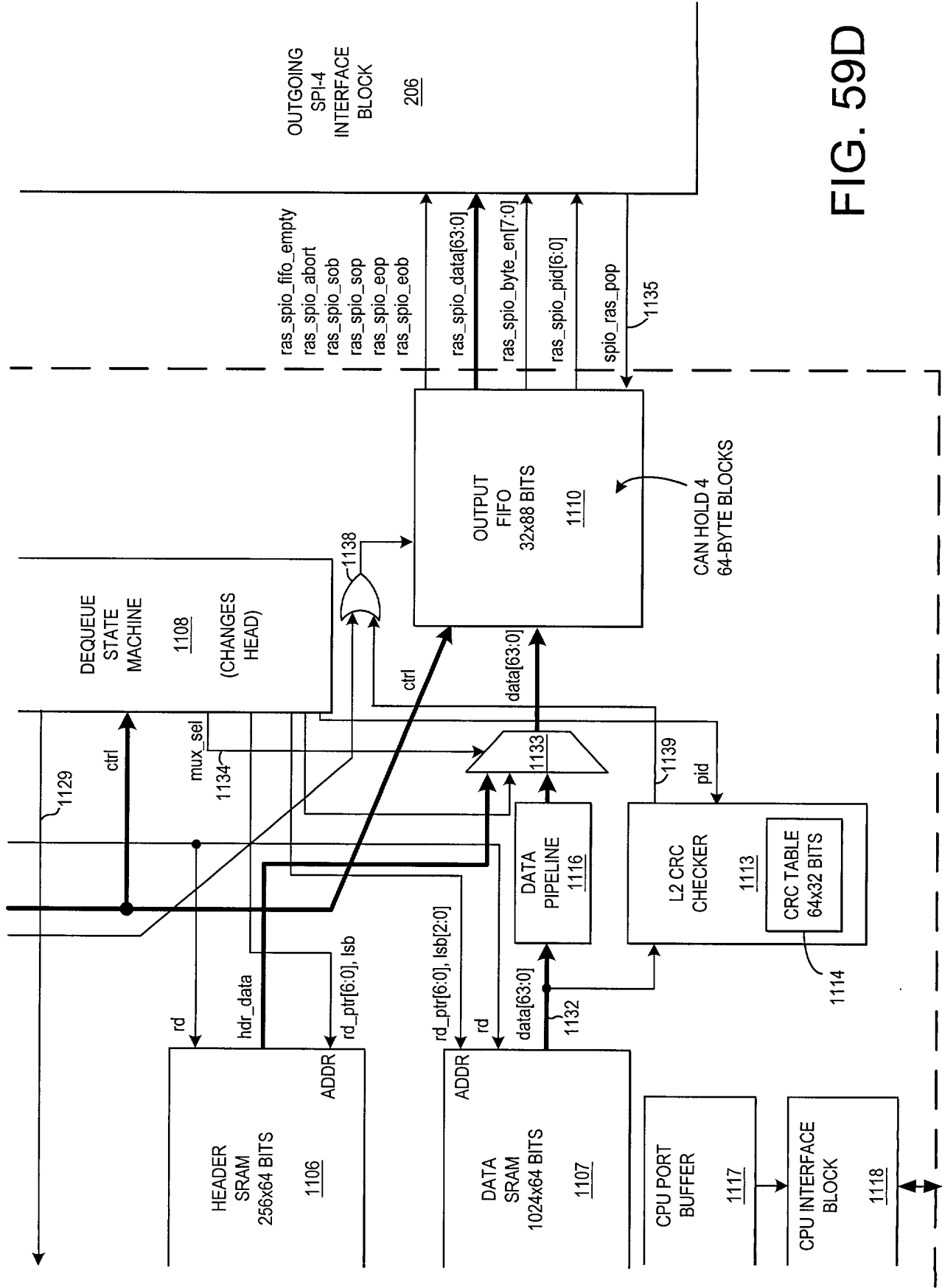
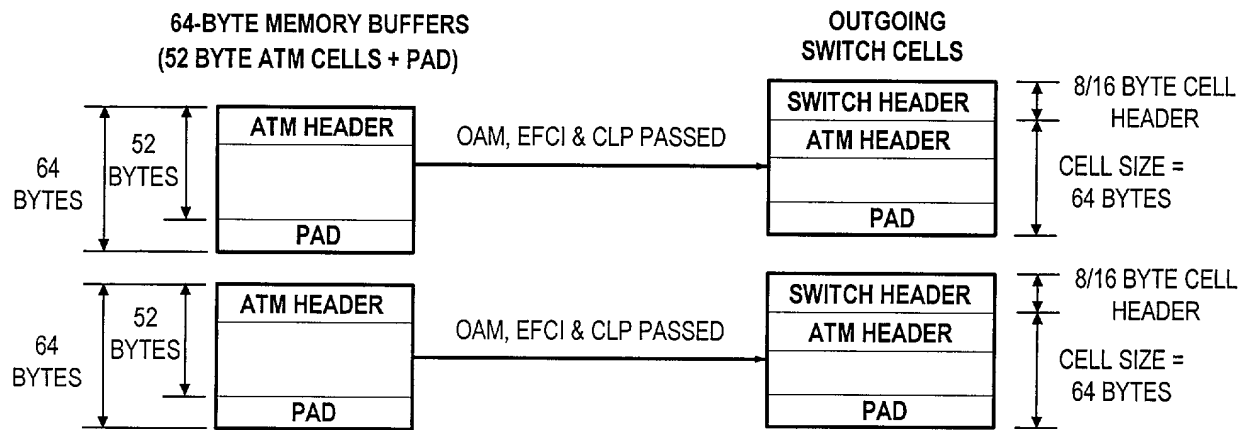
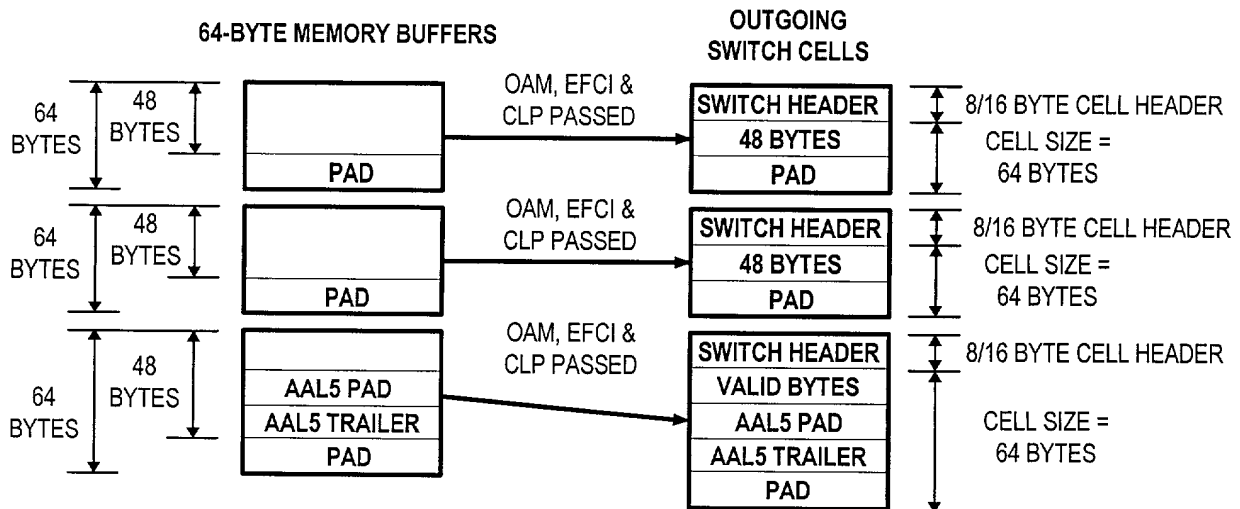


FIG. 59D



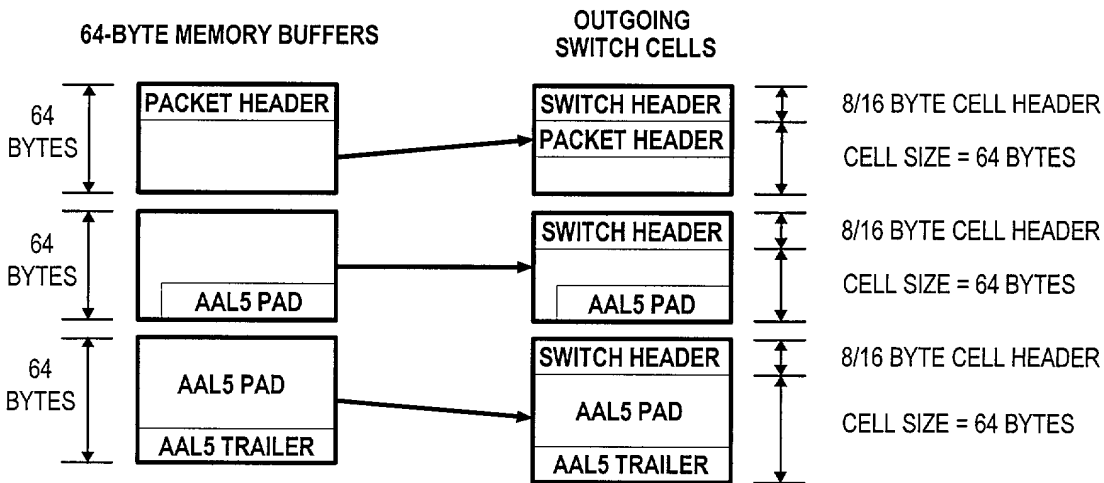
REASSEMBLY TYPE 1
(INGRESS APPLICATION TYPE 0)

FIG. 60A



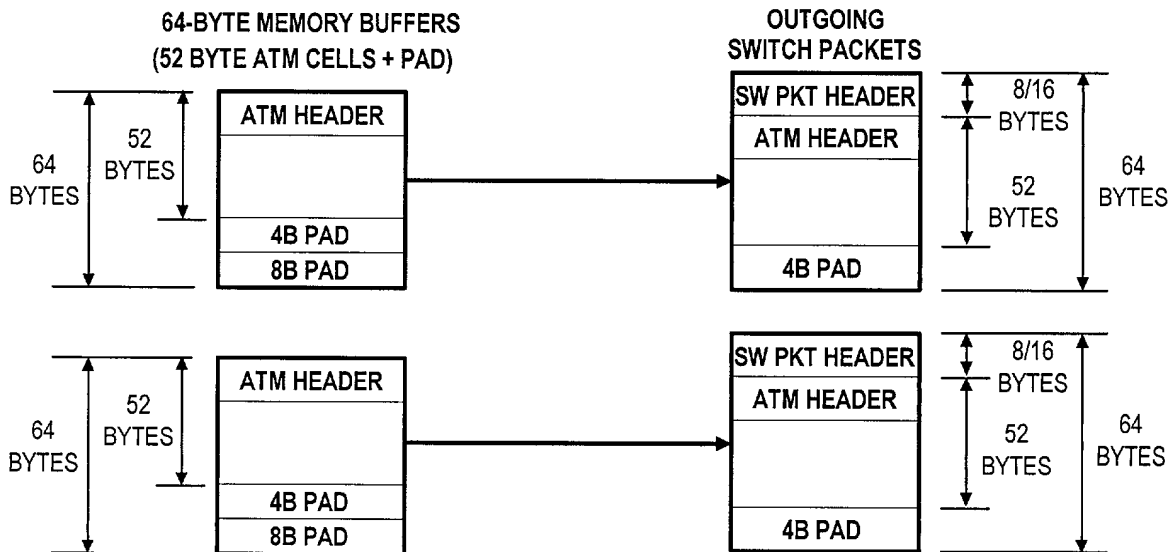
REASSEMBLY TYPE 1
(INGRESS APPLICATION TYPE 1)

FIG. 60B



REASSEMBLY TYPE 1
(INGRESS APPLICATION TYPE 3)

FIG. 60C



REASSEMBLY TYPE 2
(INGRESS APPLICATION TYPE 4)

FIG. 60D

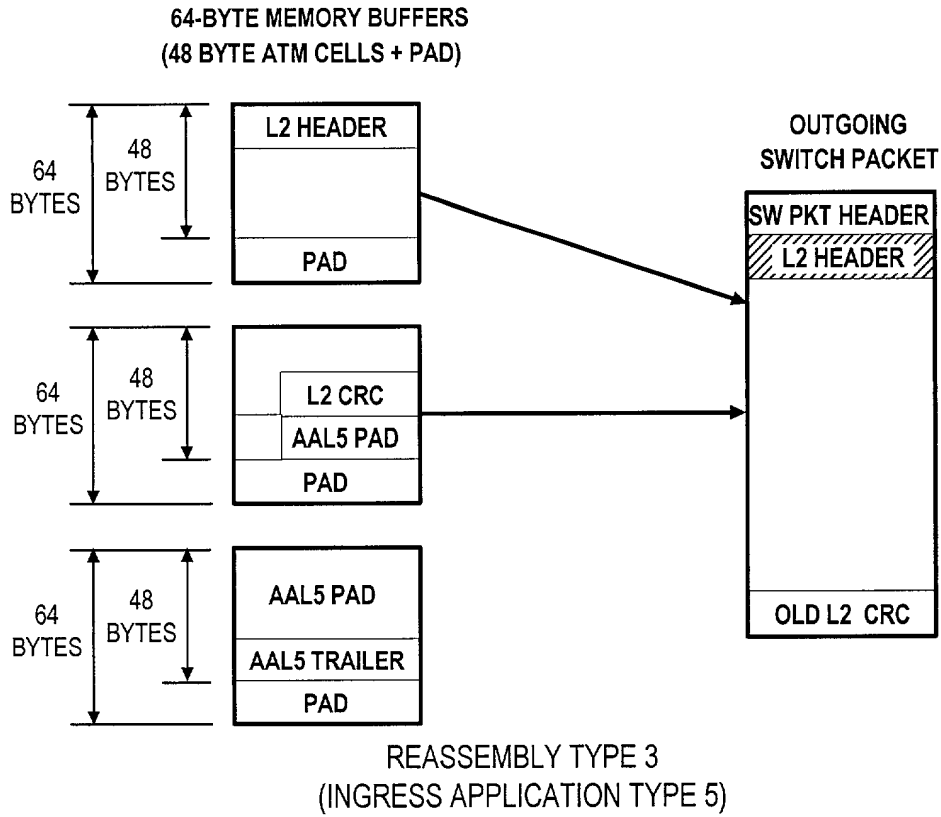


FIG. 60E

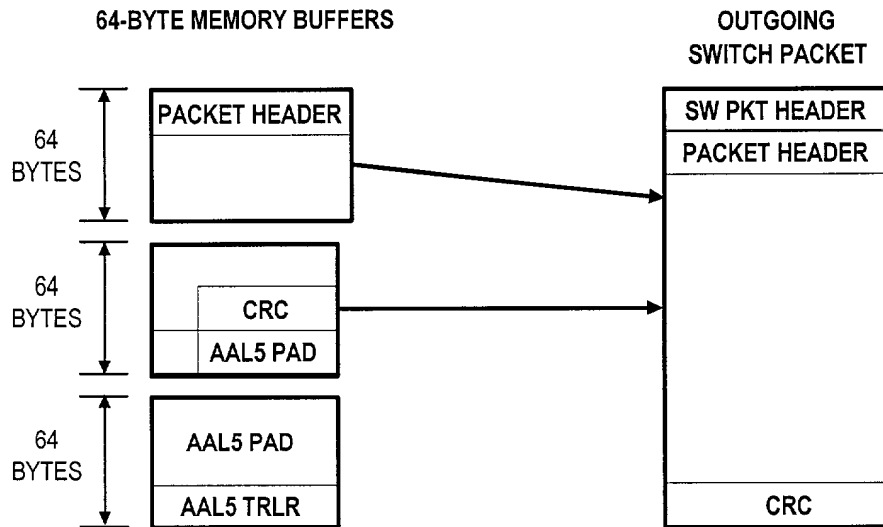
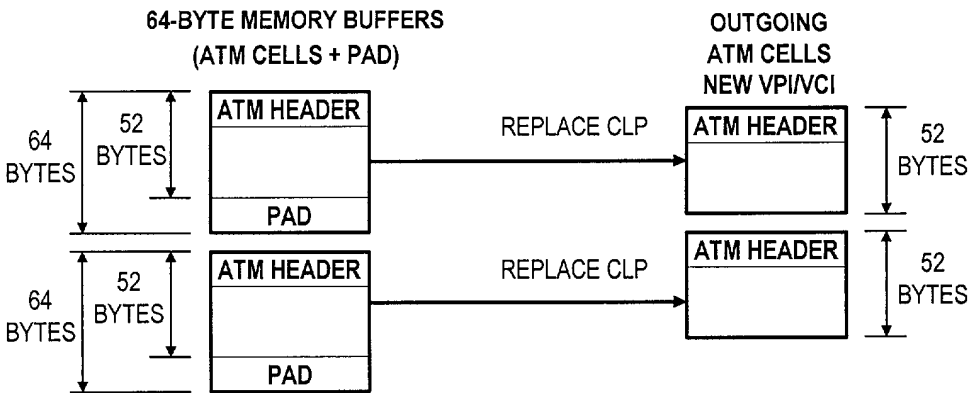
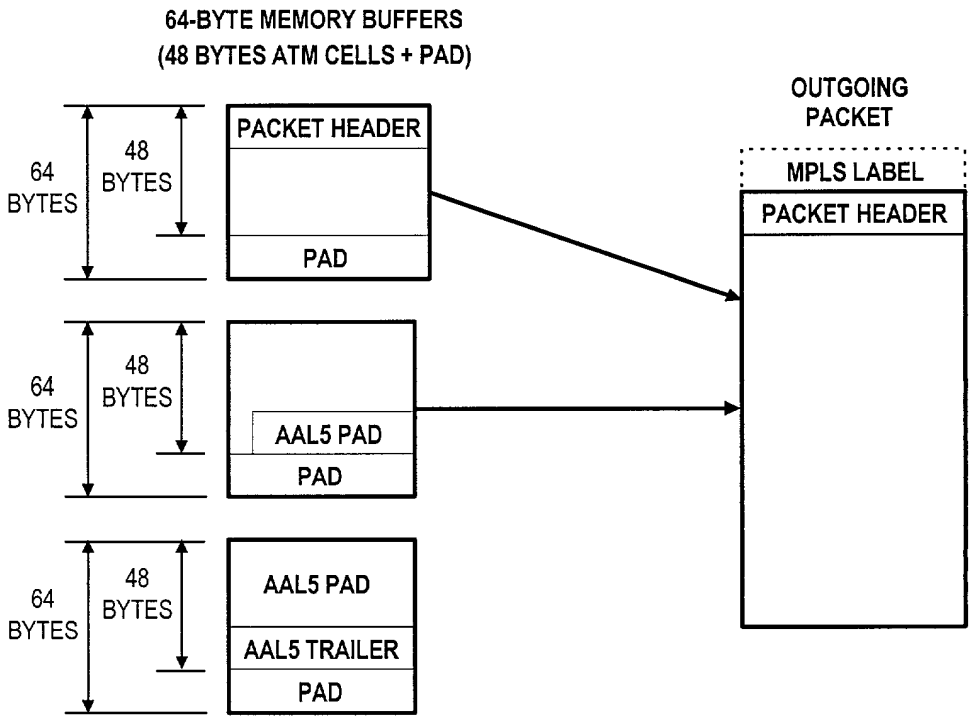


FIG. 60F



REASSEMBLY TYPE 5
(EGRESS APPLICATION TYPES 8 AND 12)

FIG. 60G



REASSEMBLY TYPE 6
(EGRESS APPLICATION TYPE 9)

FIG. 60H

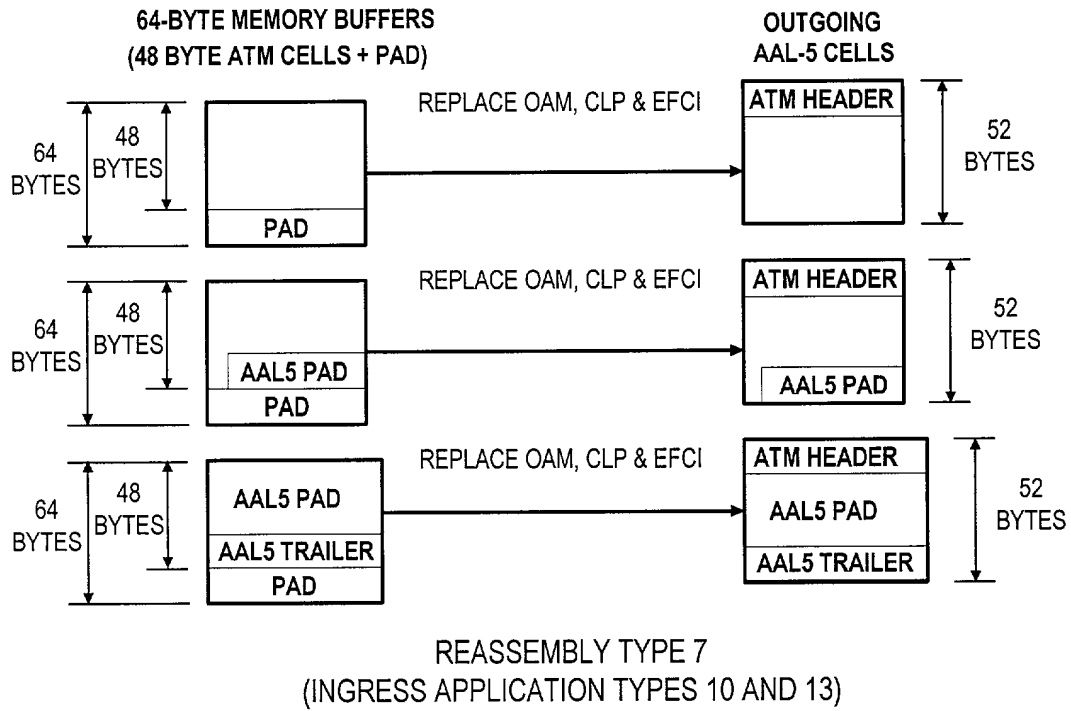
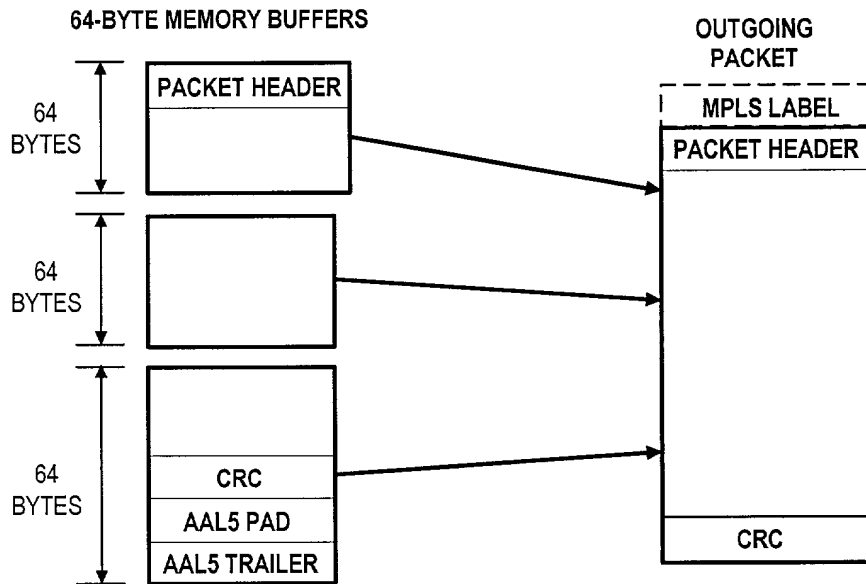


FIG. 60I



REASSEMBLY TYPE 8
(INGRESS APPLICATION TYPES 11 AND 14)

FIG. 60J

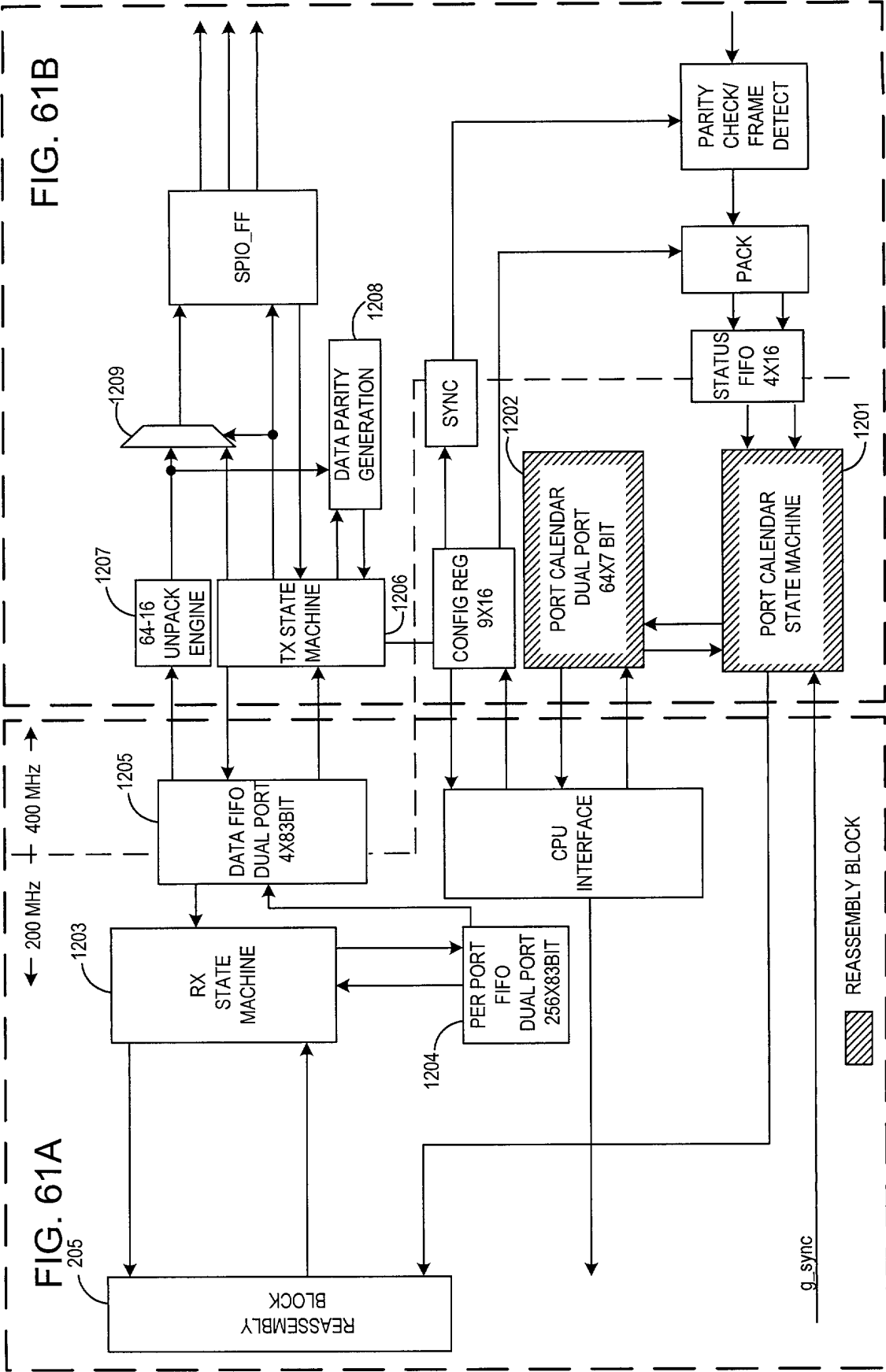


FIG. 61 OUTGOING SPI-4 INTERFACE BLOCK

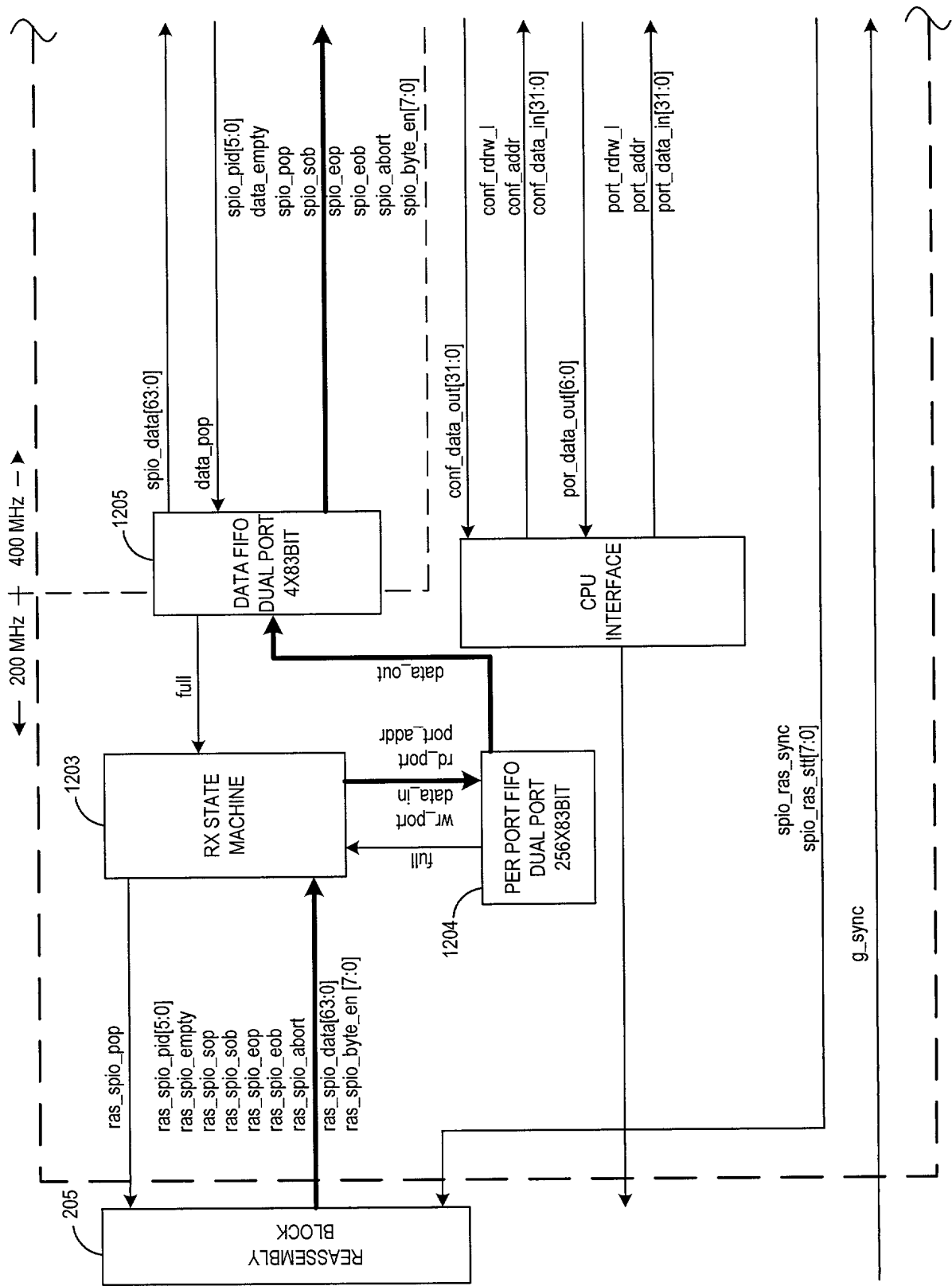


FIG. 61A OUTGOING SPI-4 INTERFACE BLOCK

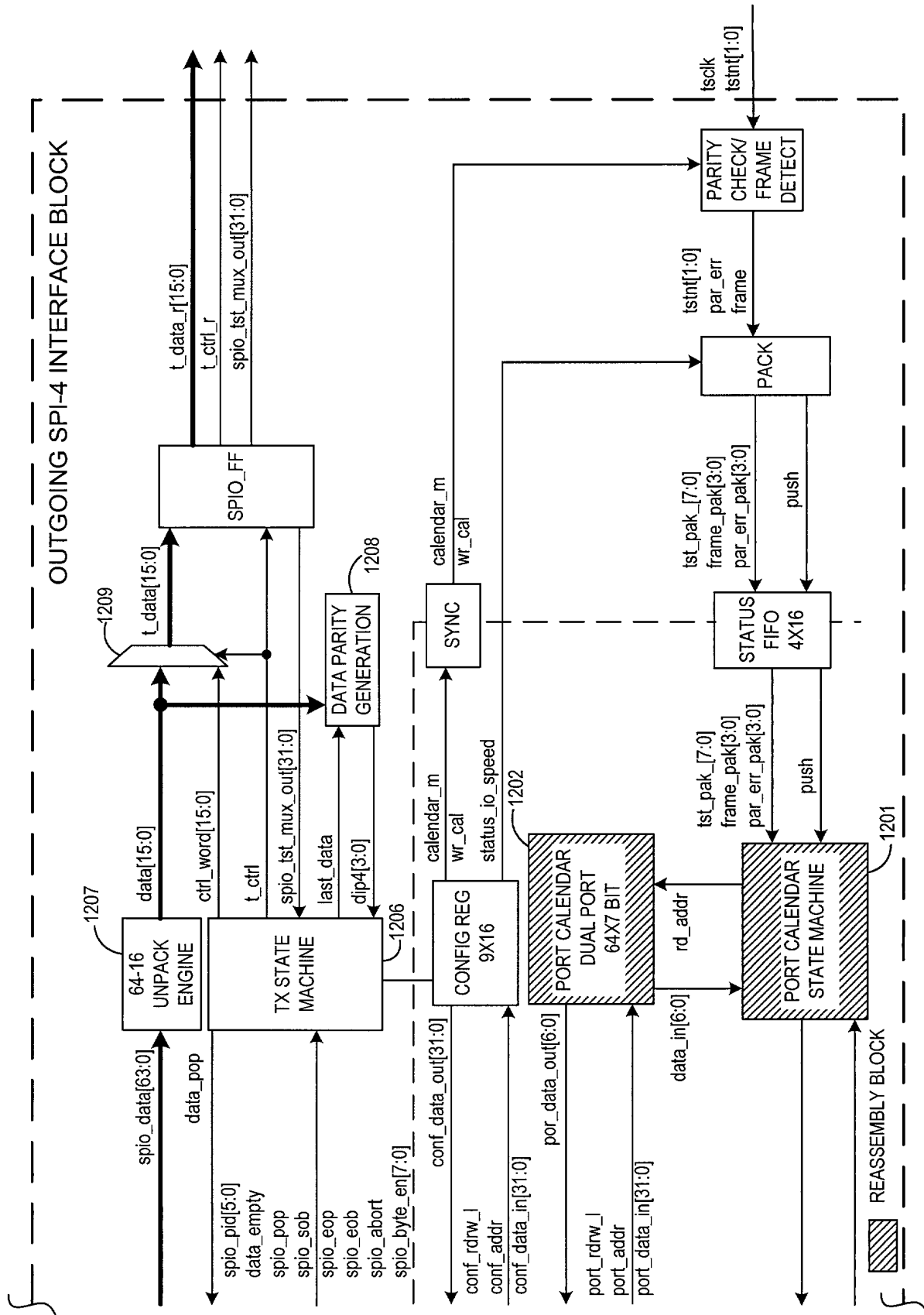


FIG. 61B OUTGOING SPI-4 INTERFACE BLOCK

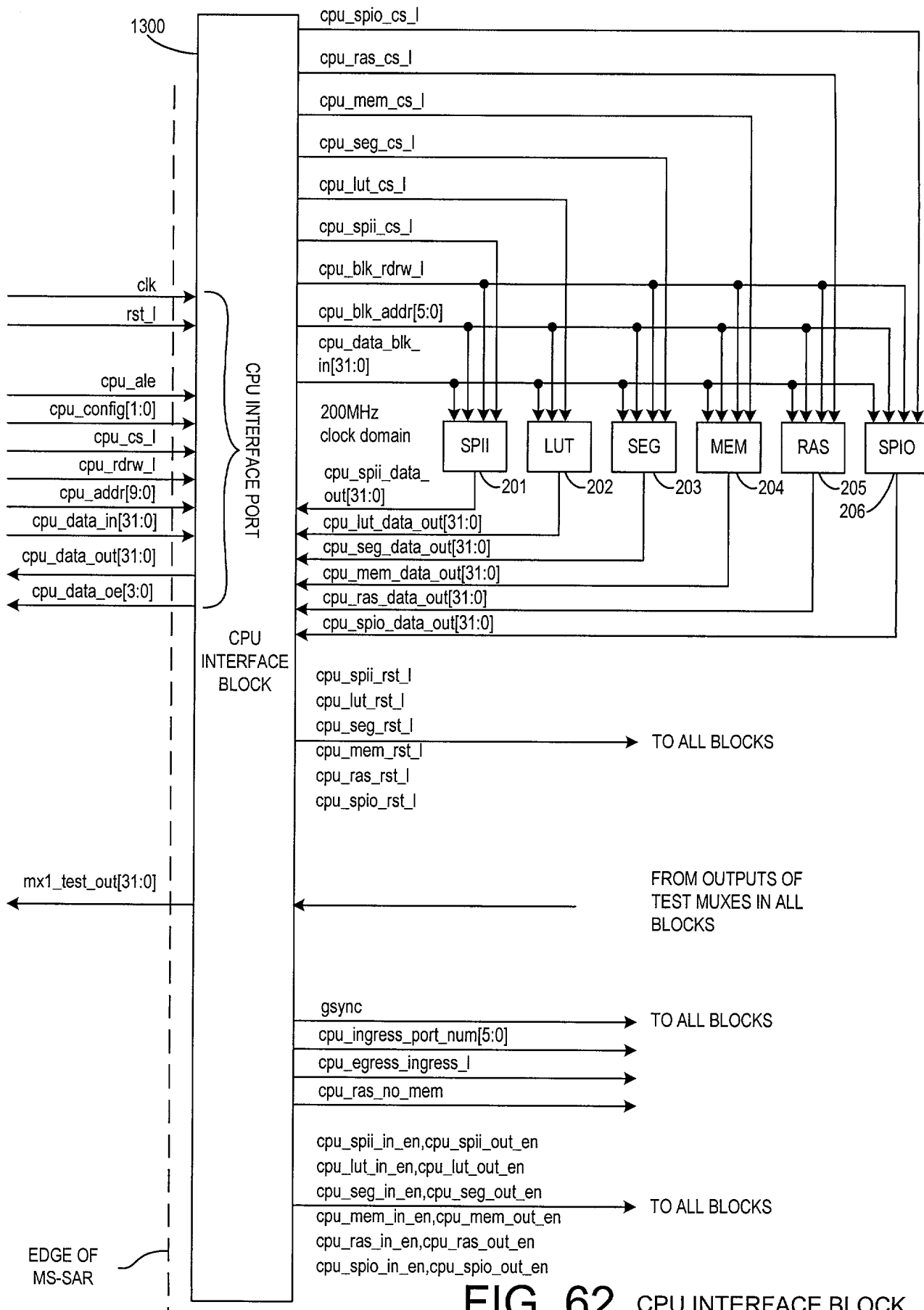


FIG. 62 CPU INTERFACE BLOCK